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CONDITIONS IN WEST SURVEYED ON RECENT TRIP

IMPRESSIONS OF THE MINISTER OF THE INTERIOR

Indian Reserves and National Parks Visited —Economic Situation on Prairies Summarized

With three main objects in view, Hon. Thomas G. Murphy, Minister of the Interior and Superintendent General of Indian Affairs, this autumn made a trip of a month's duration through Western Canada. These objects were to ascertain at first hand the condition of Canada's Indian wards, to make a personal inspection of certain of the National Parks of Canada, and to learn the exact state of affairs in the prairies under present market conditions.

As regards the Indians, Mr. Murphy found that the condition of the bands in the southern part of the territory over which they are scattered is normal, but in the north they are having, in some cases, a severe season and will require assistance. In the south not only are the bands engaged in farming and stock raising but they have opportunities for obtaining work at lumbering, fishing, and freighting to which they can turn in off seasons. Many of the northern bands are chiefly dependent on the game animals which have been decreasing of late years and, with scarcely any other occupation to afford them relief, these wards of the Government will require assistance. Administrative action to meet the changing situation in the north is also under consideration. In British Columbia, conditions are normal but, here again, the fact that the Indians are scattered in hundreds of small communities throughout the province points to the need of consolidation in larger areas wherever possible. Other problems, such as the future of the Kitsilano reserve, now within the boundaries of the city of Vancouver, were also studied on the ground.

Of the National Parks, the two to which most attention was given on the trip were Riding Mountain in Manitoba, and Banff in Alberta. Mr. Murphy is enthusiastic in regard to Riding Mountain Park, which is an ideal area and one well worthy of being set aside as a national playground. Clear lake —with its background of tall evergreen trees, its beautiful sandy beaches, and its crystal-clear water through which one can see objects on the bottom, fifteen or twenty feet below—can challenge comparison with many lakes at present better known in higher mountain ranges. As in all the parks, steady progress is being made on improvements. The chief work here at present is the construction of two roads to connect with leading highways in the province. The official opening of this park it is anticipated will take place during the month of August this year (1931).

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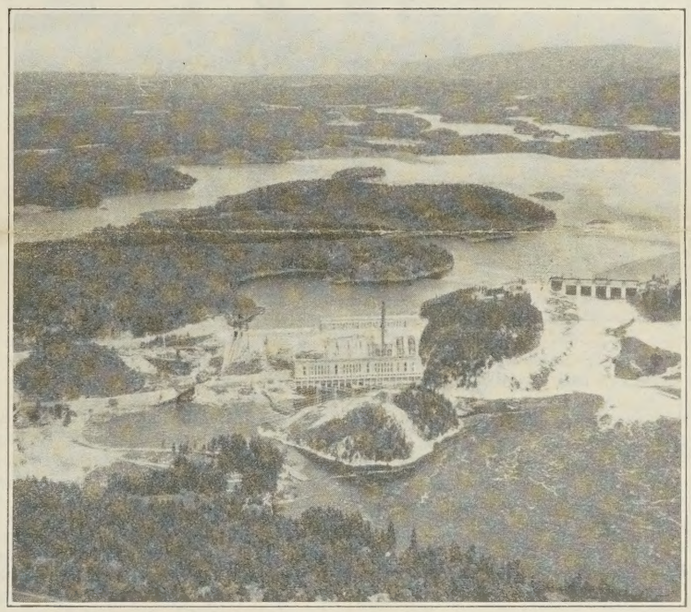
CANADA'S WATER-POWER ADVANCE

Steady Progress in Development in Dominion Continued in 1930—Minister's Annual Statement

A review of water-power activities in Canada during 1930 by the Hon. Thomas G. Murphy, Minister of the Interior, indicates that both the construction of new plants and the extension of existing ones were maintained at a high level throughout the year and that these activities were not confined to restricted districts but were general in practically every province.

During the year, Ontario led in new installations placed in operation but the largest program of construction is under way in Quebec. Numerous important activities are also reported from the other provinces.

In British Columbia, the British Columbia Power Corporation, through its subsidiaries, completed and brought into operation the initial installation



Water-Power Development in Canada—An aerial view of the development at Paugan Falls on the Gatineau river in Quebec. Preparations are being made for the addition of the seventh unit of 34,000 horse-power to this plant.

New installations brought into operation during 1930 aggregated 397,850 horse-power, bringing the total installation for the whole Dominion to a figure of 6,125,000 h.p. at the end of the year. Construction is active, also, on a number of undertakings throughout the country, several of which are of outstanding magnitude, and with the completion of these during the next two or three years more than 1,500,000 h.p. will be added to the Dominion's total.

This large program of construction involving an expenditure of probably $80,000,000 during the year just passed and with as much as $300,000,000 being required during the next two or three years has had, and will continue to have, a very important influence on employment conditions throughout the Dominion. It is estimated that more than 11,000 men are at present employed on the actual construction of these various developments while several times as many are given employment in manufacturing and other establishments providing the material and equipment going into the works.

of 47,000 h.p. in the 188,000-h.p. Ruskin plant on the Slave river, added an 18,000-h.p. unit in the Jordan River development on Vancouver island, and advanced construction on the Bridge River project which is expected to come into operation in 1932 with an initial installation of 56,000 h.p., the ultimate capacity being 600,000 h.p. The West Kootenay Power and Light Company commenced the construction of its fourth development on the Kootenay river at Corra Linn where 57,000 h.p. is being installed. The company actively pursued investigations with a view to the early development of the Pend d'Oreille river involving an installation of about 350,000 h.p., and also a 30,000-h.p. development on Adams river below Adams lake. The Powell River Company made good progress with its Lois River development which will come into operation in 1931 with the initial unit of 24,800 h.p., the complete plant to comprise two such units. The Northern British Columbia Power Company completed and brought into operation the initial installation of 6,000 h.p. in its Falls

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REVIEW OF FOREST SITUATION IN CANADA IN 1930

PAST YEAR WAS A CRITICAL PERIOD

Forest Products Industries Have Felt Effect of Depression—Outlook For Coming Year

During the year just passed the industries engaged in the manufacture of forest products, in common with other industries, have experienced serious difficulties in marketing their products, states the Hon. Thomas G. Murphy, Minister of the Interior, in his New Year's review of the forest situation in Canada. Faced with both world-wide over-production and restricted demand, curtailment of production has been necessitated. Since the United States and Great Britain, our principal markets for forest products, are open to all countries, the advent of Russian lumber and pulpwood into those markets, though as yet in comparatively small quantities, has had a decidedly depressing effect on our export trade.

While our domestic consumption provides a market for about 70 per cent of the total amount of wood cut, we have had during recent years a surplus, equivalent to about 1,200 million cubic feet, for export. The total value of the exports of forest products, exclusive of printed matter, during the years 1925-1929, has averaged $283,356,156 and as the imports averaged only $36,467,506, there has therefore been an average favourable balance of trade of $246,888,650, of which 83·6 per cent occurred in our trade with the United States and 6·7 per cent with Great Britain. The maintenance of a stable market for this exportable surplus in forest products as an offset to imports of other commodities is therefore of vital importance to Canada.

Aside from the fact that in the manufacture of paper, lumber, and other products of the forest approximately $500,000,000 is added to the wealth of Canada annually, and remunerative employment is afforded to 200,000 people, these products are a most important factor to our transportation systems. It is not generally appreciated that more railway cars are required to handle forest products than grain and grain products and that during the years 1927 to 1929, 17·6 per cent of the cars loaded in Canada carried forest products, while 15·5 per cent were loaded with grain and grain products. The consequences of depression in our forest industries are indicated by the fact that during the past year there was a decrease below 1929 of approximately 100,000 cars used for forest products as against a drop of 45,000 in the number of cars loaded with grain and grain products.

The pulp and paper industry which, during the last decade, has become the

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CANADA'S MINING INDUSTRY IN 1930*

Maintenance of Production Had Stabilizing Influence on Business—Prospects For 1931

The mining and related metallurgical industries have to quite an extent suffered from the business conditions that prevailed during the past year. The "quantity" mineral production for 1930, however, may approach the total for 1929, which gives clear evidence that in a year of generally decreasing production the mining industry has been an important stabilizing influence because of the employment for labour and the market for various commodities which it has provided.

Exploration, prospecting, and development of new properties have not been prosecuted to the wide extent characteristic of recent years. However, many exploration and mining companies have quietly and aggressively continued their search both near and far, for new mineral occurrences and have proceeded with the examination of discoveries made in 1929 and 1930.

Decreased prices as compared with 1929 of all mineral products except gold and nickel have led generally to curtailment of development programs at established properties. It is worthy of note, however, that such developments carried out at several properties in the more important mining camps throughout the country have been rewarded with satisfactory results.

The year marked the largest development in ore-dressing and metallurgical operations ever recorded in the history of the Canadian mining industry. The larger part of the expansion was confined to mines producing the base metals and to gold mines, and included the putting into operation of a copper refinery with a rated capacity of 120,000 tons of refined copper a year at Copper Cliff, Ontario; the construction of a concentrator, a copper smelter, and an electrolytic zinc plant at Flin Flon, Manitoba; the commencement of a fertilizer plant at Trail, British Columbia; the enlargement of gold mills at Porcupine and Kirkland Lake, Ontario; and the beginning of construction on a copper refinery at Montreal East, Quebec.

Metal production for the first nine months of 1930 was higher in quantity but lower in value than for the corresponding 1929 period. Non-metallic production for the same period was lower both in value and in quantity. In the fuel group the coal output was lower while that of petroleum was considerably higher. The production of structural materials was lower for the 1930 period.

An official estimate of the value of mineral production in Ontario in 1930 is given as $114,000,000 as against $117,960,722 in 1929, and $100,083,122 in 1928. British Columbia estimates a 20 per cent decrease in value. Estimates for the other provinces are not yet available but taking into account such information as is obtainable, the value of Canada's mineral production for 1930, notwithstanding very low prices, will probably approximate that of the year 1928.

During the year the Dominion, and several of the Provincial Governments, enacted legislation or made appropriations with a view to benefiting the industry. The control of the natural resources of the provinces of Alberta, Saskatchewan and Manitoba was transferred from the Dominion to the respective Provincial Governments. To determine the cost of moving coal from Nova Scotia, New Brunswick, and Alberta into the central provinces, the Dominion Government authorized the extension for another year of assistance in freight rates. Somewhat similar assistance was provided for the movement of coal from Saskatchewan, Alberta, and the Crowsnest area of British Columbia into areas in Manitoba where imported coal has been offering serious competition. Funds were also provided for the construction of new ore-dressing laboratories at Ottawa.

On the whole conditions in the mining and metallurgical industries have been better than might have been anticipated earlier in the year and when business improves throughout the world, the mining industry in Canada will, no doubt, quickly respond to such stimulus.

**Prepared at the direction of Dr. Charles Camsell, Deputy Minister of Mines, Canada.*

TRANSPORTATION IN THE NORTH

Eskimo Dog Will Long Remain Chief Means of Travel in Canada's Arctic Regions

Notwithstanding the advances made by the aeroplane towards solving the problem of transportation in Canada's Far North, the Eskimo dog still remains a major factor in meeting local needs. Explorers and investigators of the North West Territories and Yukon Branch of the Department of the Interior, who through their work in the Arctic regions of the Dominion have been brought into close contact with the native dogs, agree that the dog train will long remain of great importance as a means of transportation in Northern Canada.

Transportation in the North—This photograph of an Eskimo dog-team hitched in the style used along Canada's northern coasts was taken on Baffin island. Inset is a fine specimen of a pure bred Husky dog.

The Eskimo or Husky dog is the only domesticated animal of the Eskimos of the Canadian Arctic regions. Like its master, it is generally believed to have had its origin in Asia and probably was brought into North America by these people. Pure-blooded Eskimo dogs are now very rare, due to the fact that since the first contact between white men and Eskimos, and particularly in recent years, much attention has been given to increasing the size and strength of these northern dogs for draught purposes by cross-breeding with other kinds of dogs. Unfortunately this breeding has often been carried on in a rather indiscriminate way and although in some instances a faster or heavier type of dog has been developed, it is highly problematical if, for general purposes under Arctic conditions, any improvement has been achieved.

The pure-blooded Eskimo dog is fairly large and wolf-like, averaging from twenty-two to twenty-eight inches in height over the shoulders and when in good condition from sixty to one hundred pounds in weight. It is strong and powerfully built, with unusually heavy chest and neck. The muzzle is rather short and broad and the ears pointed. The legs are short but very strong and the feet small and compact and densely furred between the toes. The underfur is short but remarkably thick and is overlaid during the winter by straight hairs three to four inches long, except on the shoulders where a mane-like tuft six to seven inches long is found.

In colouration the present-day Eskimo dog shows a great deal of variation, but for the pure-blooded animal probably whitish-gray with a somewhat darker back, may be regarded as typical. Characteristic of the Eskimo dog is the magnificent bushy tail, usually carried curled forward over the hip.

In hardiness the Eskimo dog undoubtedly surpasses all other domestic animals, including the reindeer. It can stand the lowest temperatures and sleep out in the severest blizzards without any shelter. When necessary it can, like its master the Eskimo, withstand starvation surprisingly well and cases have been recorded of dog teams that have worked hard under severe conditions with little or no feed for several weeks.

During the winter the dog is used for hauling sleds and in the summer for towing umiaks or canoes along the shore and for carrying loads. Hitched to a sled an Eskimo dog is required to haul loads from 100 to 150 pounds per animal, depending on the condition of the trail, but for long trips probably 100 pounds per dog is the average. The largest teams are used in Greenland and in Alaska where twelve or even sixteen dogs are harnessed to the sled for long trips, while the smallest are used by the Eskimos of the central part of Northern Canada whose teams usually consist of four or five dogs. The most trying time for an Eskimo dog is during the summer when the weather is hot and the mosquitoes and flies torment man and beast. For packing, a primitive sort of pack-saddle is made from sealskin. Strong dogs will carry loads of half their own weight

In the history of Arctic exploration the Eskimo dog has earned an enviable position. Although of late years the dog-train has been supplanted by the aeroplane and the radio as a means of transportation and communication between far northern points and the outside world, it still remains an important factor in filling local transport needs under the varied and often adverse conditions found in the Arctic.

BENEFICIAL EFFECT OF BIRD PROTECTION

Marked Increase in Numbers of Seabirds in Sanctuaries in Gulf of St. Lawrence

Canada now has more than forty bird sanctuaries specially reserved for bird protection purposes. These are scattered across the country from Nova Scotia to British Columbia. Some of the provinces also maintain similar reserved areas for the benefit of native bird life.

The effect that one group of these sanctuaries is producing is shown by a census taken during the past summer on ten such reserves consisting of islands along the north shore of the gulf of St. Lawrence inhabited chiefly by seabirds. By providing these useful and attractive waterfowl with safe, undisturbed areas for rearing their young, the National Parks of Canada Branch of the Department of the Interior, which carries on this work, is enabling them to maintain themselves and increase in numbers in spite of many adverse conditions. On comparing the figures obtained in 1930 with the results of a similar census made in 1925, when these sanctuaries were established, it is found that the bird population of the reserved areas has increased by nineteen per cent in the five-year interval. Some of the more important species nesting here, with the respective gains in numbers that they have made, are: eider duck, 27 per cent; puffin, 13 per cent; razor-billed auk, 37 per cent; common murre, 11 per cent; black guillemot, 134 per cent; herring gull, 159 per cent; and common tern, 57 per cent.

The total seabird population of the ten sanctuaries in 1930, not including young birds hatched in that year, was 100,836, of sixteen different species.

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OTTAWA, JANUARY, 1931

CANADA'S WATER-POWER ADVANCE

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River development, and also completed the transmission line which carries this power to Prince Rupert.

In Alberta the Calgary Power Company completed and brought into operation its 132,000-volt transmission line carrying power 175 miles from the Ghost development on the Bow river to Edmonton. The company also extended its transmission system throughout the province.

In Saskatchewan the Churchill River Power Company brought into operation its Island Falls development on the Churchill river with the initial installation of 42,000 h.p., from which power is being delivered to the Hudson Bay Mining and Smelting Company at Flin Flon and the Sherritt-Gordon Mining Company at Cold Lake.

In Manitoba good progress was made by the Northwestern Power Company with the Seven Sisters development on the Winnipeg river which will come into operation in 1931 with the initial installation of three 37,500-h.p. units under partial head. The city of Winnipeg also advanced the construction of its Slave Falls development on the Winnipeg river and will bring the first two units of 12,000 h.p. each into operation in 1931. Power from both undertakings will be carried to Winnipeg over transmission lines now under construction. The Manitoba Power Commission extended its transmission system by the construction of 319 miles of new lines and brought power to twelve additional municipalities.

In Ontario the Hydro-Electric Power Commission of Ontario completed its 54,000-h.p. development at Alexander Landing on the Nipigon river for the further supply of its Thunder Bay system which includes the cities of Port Arthur and Fort William. The Commission also installed the tenth and last unit of 58,000 h.p. in the Queenston station on the Niagara river and engaged in jointly carrying out a 224,000-h.p. development at Chats Falls on the Ottawa river with the Ottawa Valley Power Company, the latter having a licence to develop the Quebec half of this site. In Northern Ontario the Ontario Power Service Corporation commenced the development of the canyon site on the lower Abitibi river where 330,000 h.p. will be installed and from which 100,000 h.p. will be supplied to the Hydro-Electric Power Commission of Ontario for transmission to the Sudbury mining district. The Canada Northern Power Corporation completed and brought into operation its new 13,000-h.p. plant at the Upper Notch on the Montreal river, and the Algoma District Power Company added a second unit of 11,000 h.p. to its plant at High Falls on the Michipicoten river.

In Quebec, the Shawinigan Water and Power Company completed the construction of the Taureau Rapid storage dam on the Mattawan river, thus impounding 33,000,000,000 cubic feet of water, added a 25,000-h.p. unit to its Grand'Mere plant, and is adding a 30,000-h.p. unit at La Gabelle to be in operation early in 1931. The company also commenced the construction of a new development at Rapide Blanc on the Upper St. Maurice river where 160,000 h.p. is to be the initial installation. The Maclaren-Quebec Power Company completed and brought into operation a 90,000-h.p. installation at High Falls on the Lievre river, also a storage dam at Cedar Rapids on the same river which will impound 25,000,000,000 cubic feet of water. Alcoa Power Company made good progress with the construction of its development at Chute à Caron on the Saguenay river where 260,000 h.p. will be brought into operation in February, 1931. The Beauharnois Power Corporation energetically pressed the construction of its fifteen-mile canal which will carry St. Lawrence River water from lake St. Francis to a power station on lake St. Louis where 500,000 h.p. will be installed. The initial installation of 200,000 h.p. is scheduled for completion by October 1, 1932. At Chats Falls on the Ottawa river, as has already been mentioned, the Ottawa Valley Power Company is jointly carrying out a 224,000-h.p. development with the Hydro-Electric Power Commission of Ontario. Other installations made during 1930 included a 6,000-h.p. addition to the Lower St. Lawrence Power Company's plant on Metis river at Price, 1,000 h.p. by J. Ford and Company near St. Raymond, and 700 h.p. by the Baie St. Paul Electric Company. The Ontario Paper Company has a 40,000-h.p. development under construction near the mouth of the Outardes river, and the Gatineau Power Company is preparing to add the seventh unit of 34,000 h.p. to its plant at Paugan Falls on the Gatineau river.

In New Brunswick the St. John River Power Company added the fourth unit of 20,000 h.p. to its Grand Falls plant in the St. John river, bringing it to its final designed capacity of 80,000 h.p. The town of Edmunston completed a new plant of 1,050-h.p. capacity on the Green river.

In Nova Scotia the Avon River Power Company completed and brought into operation a new development of 4,500 h.p. on the Black river, the Digby County Power Board made a new installation of 600 h.p. at Weymouth Falls, and the Nova Scotia Power Commission acquired the town of Shelburne plant on the Roseway river and made certain renovations.

SKI-ING IN EASTERN CANADA

Pine-clad Slopes of the Laurentians Form Paradise For Skiers—Lure of the Sport

Another winter is here; snow lies thick upon the hills and the vast army of skiers, reinforced by a steadily increasing stream from across the boundary, are on the move northward, roaming through the wilderness of the Laurentian country, in search of that treasure without which no earthly possession is worth having, that stock of health and strength which is the unfailing reward of the devotee of the ski, and which is dispensed in lavish measure by this northern climate.

The season of 1929-30 was marked by a general scarcity of snow and a frequent formation of crust over the Gatineau hills and the Laurentian country in general, and while this condition did not greatly interfere with the expert skiers, for whom speed is the main consideration, and who can stop and turn at will on the steepest slopes, it did prevent average skiers from turning out as much as usual. With the exception of the country north of Toronto, these conditions were general throughout that vast stretch of land north of the Ottawa and St. Lawrence rivers. Good ski-ing conditions were restored by an abundant fall of snow and the advent of colder weather in February. The spring ski-ing was really marvellous, and outing in bathing suits, over honeycombed snow and under the hot March sun was enjoyed to a greater extent perhaps than it had ever been before. Heretofore most people have laid their skis away as soon as the pavements were bare in the cities. They did not seem to realize that winter conditions still hold sway at a small altitude of 1,200 or 1,500 feet when the snows have vanished from the valleys, and that March, and often April, with their velvety snow and bright sunshine, are perhaps the most enjoyable months of the year for ski-ing.

While eastern points were having difficulties early in the season with crust and thin snows, the area to the west, and especially Toronto, was experiencing an unprecedented ski boom. Snow conditions remained ideal throughout the season on the highlands surrounding the Summit Golf Club, twenty miles north of the Queen City, and as a result the Toronto Ski Club membership jumped from 200 to nearly 1,000, thus ranking second in size to the Ottawa Ski Club, which still has a comfortable lead of over a thousand.

This friendly rivalry in Eastern Canada is having a very beneficial effect on the sport. The country as a whole (and especially those more accessible parts of the Laurentian territory, with the new and improved facilities provided at Murray Bay, Shawbridge, north of Montreal, Lucerne, midway between Montreal and Ottawa, and Camp Fortune, north of Ottawa) is fast rivalling even the French or Swiss Alps and acquiring a reputation for winter sports unexcelled anywhere. While the loftiest hills in the Laurentian country do not perhaps anywhere exceed an altitude of some 1,500 feet, yet there is sufficient variety to please the most experienced skier. There is enjoyment for all—for the dare-devil ski-rider who delights in taking precipitous slopes or for the average ski-hiker whose main object is to be out in the fresh air and sunshine, with a gentle slope here and there to relieve the monotony, if there ever is monotony, in gliding under a canopy of blue skies, or of evergreens.

The ski-ing facilities are perhaps at their best in the country north of Montreal, which affords long stretches of smooth and rolling fields, requiring but little snow to make the sport safe. The more abrupt and wooded slopes of the Gatineau hills, north of Ottawa, require greater depth of snow, but the wooded and well-sheltered trails cut in these hills are perhaps more enjoyable in very cold weather, such as may be had in January or February, than the open fields of Shawbridge. Of all the trails that have been blazed in this mountainous country, those of the Ottawa Ski Club are justly famous; much money has been spent and much volunteer work has been given to removing obstacles such as stumps and stones and in filling holes and dips. The Canyon Trail, the Little Switzerland Trail, the Western Trail, and the Highland Trail, the Dome Hill Trail, the Mica Mine Trail, etc., each extending over from five to seven miles of wooded land, attract an increasing flow of visitors every year and thousands from the Capital every week-end, from little tots, seven years old, to men over sixty.

But the greatest development that has taken place in the sport of ski-ing during recent years is the improvement in all round skill, not only among ski-runners who train for competitions, but among the general public. More and more people are getting to be masters of their skis; they are learning to check their speed; they are becoming proficient in swings and turns, and the amount of pleasure they get out of the sport increases as their skill improves.

Doubtless the pleasure of roaming through the wilderness, over frozen lakes and swamps, over rough ground that would be practically impassable at any other time of the year, this feeling of freedom and exhilaration that the ski alone can give, will always be the greatest attraction in this sport; no special skill is required for gliding over gently rolling country but the ability to handle one's skis in difficult ground adds immensely to the pleasure of ski-ing, and the future of the sport is intimately bound up with the development of skill. By issuing badges for various classes of proficiency, from Class III, which calls only for elementary swings, to Class I, which requires sufficient ability to take a jump on a championship hill as well as thorough proficiency in all turns, the Canadian Amateur Ski Association has done a great deal to promote the sport. Whereas ten years ago Canadian competitors in open championships were always twenty or thirty minutes behind their Norwegian opponents, to-day it is only a matter of seconds. Twice already within the last six years the Championship of Canada has been won by a native-born Canadian, and the time is not far distant when young Canadian ski-runners and ski-jumpers will be challenging the supremacy of their Norwegian friends on other fields. The Canadian Championships for 1931 have been awarded to the Revelstoke Ski Club, and it is expected that the eastern ski clubs will be represented by a strong delegation in this event.

CONDITIONS IN WEST

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At Banff Park Mr. Murphy went over the ground covered by the application for increased storage in lake Minnewanka for commercial hydro-electric purposes.

In respect to the economic situation the basic fact of course is that a year ago wheat was selling at a profit, whereas to-day its price is not equal to the cost of production. The depressed business conditions resulting from this are reflected in the reduced sales to the prairies of the staple products of the other provinces of the Dominion, as well as in the falling off in transportation business. All Canada is thus becoming aware of conditions on the prairies but, as a western man, Mr. Murphy felt that he should make himself as familiar as possible with the situation in order that he might be in a position to deal in the best way with any phases of it that come before him in the course of his administrative and legislative duties.

WINTER SPORTS IN THE PARKS

Canada's National Playgrounds Attract Many Outdoor Enthusiasts For Annual Winter Festivals

Winter sports in the mountain regions of Alberta and British Columbia are becoming increasingly popular. At Banff, in Banff National Park, the winter carnival is an event of outstanding interest and annually attracts hundreds of visitors. Elaborate opening ceremonies are followed by a full week of sporting events of all kinds, including tobogganing, ski-ing, snowshoeing, skijoring, sleighing, hockey, swimming, curling, trap-shooting and dancing. Although Banff in its beautiful alpine setting in the Bow valley lends itself naturally to the exhilarating pastimes of winter there are places such as Jasper in Jasper National Park, Mount Revelstoke and the mountains of the Pacific coast in British Columbia, which are the scenes of many thrilling forms of out-of-door winter sport.

At Jasper, curling finds favour with both men and women, and throughout the winter matches are arranged between rinks from Jasper and outside points. Snowshoeing and ski-ing are also popular. Last winter a party from Jasper made the first ski trip on record from that town to Banff. The accomplishment was especially noteworthy as three high mountain passes had to be crossed and 160 miles of unbroken trail covered. Several nights were spent in the open and food was cached in advance at locations which would be accessible under ski-ing conditions and safe from the elements and the depredations of wild animals. Ski-ing parties also visited the Columbia ice-field and were highly impressed with their venture. The ski run in the Maligne Lake district is declared to be one of the finest in America. The ski-ing parties made the Maligne Lake chalet their headquarters. The party reached the ice-fields by way of Camp Parker. Returning to the chalet the party proceeded via Waterfalls cabin through Maligne pass. A trip was also made to the Tonquin valley, which is admirably suited to ski-ing.

Although Banff and Jasper National Parks offer opportunities for the enjoyment of a wide range of sports, Mount Revelstoke Park in British Columbia has its attractions for expert ski jumpers. Every winter athletes compete for championship honours on the slopes of the mount, which possesses one of the finest ski jumps on the continent.

Winter Sports in the National Parks—An entrancing winter scene in Banff National Park, Alberta. The young lady being drawn in the dog sled was the Queen of one of the recent carnivals which are a feature of the winter season at Banff.

OIL AND GAS IN WESTERN CANADA

Summary of Development During Past Year—Petroleum Production Increased 40 Per Cent

The following summary of oil and gas development during 1930 in Western Canada has been issued by Honourable Thomas G. Murphy, Minister of the Interior:—

Early during the year the world-wide financial depression became reflected in restriction of drilling operations in Western Canada. This restriction would otherwise not have occurred for the results of the energetic campaign of the previous year and such extensions of it as persisted during 1930 have been eminently satisfactory.

As in former years, the principal development was centred about Turner Valley where, as may be seen in the production statement below, a further considerable increase in the output of wet gas was recorded.

Work at other points in Alberta was largely confined to the completion of operations begun during 1929, a noteworthy case resulting in the bringing into production of a prolific gas well north of Kinsella station on the Canadian National Railways main line, east of Edmonton, where the initial volume of gas was 28,000,000 cubic feet per day, with a closed-in pressure of 760 pounds per square inch. After a very successful cementation, carried out under the supervision of officers of the Department of the Interior in accordance with the Petroleum and Natural Gas Regulations, the well was tested and found to yield 21,000,000 cubic feet per day, with the original rock pressure.

Much encouragement was met as the result of further drilling at Ribstone, where three new wells were completed. These, together with those previously drilled, are now standing with considerable quantity of oil in them but closed in, pending the drilling of other wells and the establishment of adequate potential production to justify the cost of a pipeline and tankage for the shipment of the oil from McLaughlin station on the Canadian Pacific Railway. The oil is free from water and although low in specific gravity should serve admirably as locomotive or other fuel oil.

A somewhat higher grade oil is produced at the Red Coulee or Border field, situated west of Coutts in Alberta, where the average daily production amounts to 230 barrels. The northward extension of this field still awaits determination, the search for "pay" being still in progress.

Numerous geological parties have carried out field work during the season and in connection therewith much structural drilling has been done and geophysical exploration is now being tried. The field for this class of work is practically unlimited owing to the widespread masking of the important formations by recent and unproductive deposits.

The gross production of oil again shows an encouraging increase over the output of the previous year, the increase representing 40 per cent. The quantities of each grade of oil produced in each of the past six years are shown below:—

	Naphtha (Barrels)	Light Crude (Barrels)	Heavy Crude (Barrels)	Totals (Barrels)
1925	165,717	2,926	Nil	168,643
1926	211,008	2,609	5,981	219,598
1927	290,270	38,808	3,055	332,133
1928	410,623	70,734	8,174	489,531
1929	908,741	73,808	16,603	999,152
1930*	1,286,000	104,000	14,700	1,404,700

*(Last two months estimated.)

There is still waste of gas in Turner Valley but it must be remembered that without production of gas the output of oil would be negligible. Turner Valley is by no means an exception in regard to waste, but it is to be expected that with increased engineering knowledge and the development of markets for the gas, the waste will be considerably reduced. Towards this end an experiment was initiated during the past twelve months to store gas in the partially depleted gas sands at Bow Island. To date this experiment has been highly successful. During the short period since the experiment started—four months—there has been injected into the sands a total of 557,561,000 cubic feet.

For the year the total gas produced and used for industrial and domestic consumption in Alberta amounted to 19,830,122,000 cubic feet. There was also a small export from the Red Coulee field of 44,420,000 cubic feet.

REVIEW OF FOREST SITUATION IN CANADA IN 1930

(*Continued from page 1*)

most important manufacturing industry in the Dominion as gauged by the net value of production and the employment afforded, has experienced the effect of too rapid expansion and it will take time for the increasing demand for paper to overtake the plant development. During the last fifty years the annual world consumption of paper has increased from 1,000,000 tons to 23,000,000 tons and with the increase in education and extended use of paper for purposes other than printing, there is every reason to expect an accelerated increase in the demand for paper as soon as the present temporary trade depression is passed.

Sixty per cent of the paper manufactured in the world is at present consumed in the United States where Canada possesses a considerable advantage over other countries on account of her geographical location and transportation facilities. It may be pointed out also that European countries have developed their productive capacity practically to the limit of the growth of their forests and cannot be expected to participate to any great extent in filling increased demands. In spite of her vast forest area, the United States has become an importer rather than an exporter of wood. With regard to Russia, authorities agree that, though under pressure of immediate fiscal and political needs, that country may be able to increase her exports of wood, nevertheless her accessible forest resources will not permit exploitation at the present rate for more than a few years.

Canada of all countries is the most advantageously situated to meet the increased world demand for softwood lumber and paper to which every indication points. From our Pacific and Atlantic ports every important market can be reached and the central portion of the Dominion is close to and connected by rail with the great centres of consumption in the United States.

Practically one-third of the Dominion is essentially forest land; about 555,000,000 acres is classed as accessible and productive, 200,000,000 acres carrying timber of merchantable size and 355,000,000 acres, young growth of various ages. It is a matter of the greatest national importance that this vast area be maintained in the highest state of production, that the dissipation of our forest resources by fire, which has already consumed 60 per cent of our virgin timber, as compared with 15 per cent used, be stopped; and that every effort known to the science of silviculture be made to improve and accelerate the growth of the more valuable species of trees.

Complete statistics are not as yet compiled for the 1930 fire season. Nevertheless, information now available would indicate a vast improvement over the year 1929 in the matter of forest fire losses throughout Canada.

On the whole the fire season just closed might be classed as slightly above the normal. Periods of extreme fire danger were experienced throughout all parts of the Dominion, but at such times the various protection organizations were successful in maintaining control of the most serious situations. While forest fire losses still permit of considerable reduction, there are hopeful signs that this is being gradually effected by improvement in protection organization and a growing sympathetic and co-operative spirit on the part of the Canadian people.

The Forest Service of the Department of the Interior is at present engaged in a comprehensive inventory of the forest resources in co-operation with the various provincial authorities and it is also conducting in each province an extensive survey of the reproduction and rate of growth of the forests. When these two projects are completed, reliable data will be available upon which both governments and industries can formulate forest policies devised to ensure continuous production through regulation of depletion of the forest from all causes to conform with annual growth. The results of the surveys concluded to date show that properly protected and managed, the productive and accessible forest land in Canada is capable of growing much more timber than is now being used. If this preliminary finding is substantiated by subsequent investigations, we may rest assured that the permanence of the industries using wood as a raw material will be contingent only on proper protection and management of our great forest heritage.

NATURAL RESOURCES CANADA

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CANADA GUARDS NATIVES' HEALTH IN FAR NORTH

MEDICAL SERVICES BEING STEADILY EXTENDED

Department of the Interior's Medical Staff —Dog-train and Motor Boat Patrols

The work of the Department of the Interior in the Canadian North in safeguarding the health of the native population proceeds steadily. The latest extension of the medical service under the North West Territories and Yukon Branch is the appointment of Dr. James Moore Morrow, of Winnipeg, as medical officer of Fort Smith and surrounding district. Dr. Morrow travelled to Waterways, Alberta, by rail and from there continued his journey to Fort Smith by air, arriving on January 8. Fort Smith, which possesses a hospital, is the principal land port of entry to the Mackenzie District of the Northwest Territories and is a busy centre. The work will entail patrols southward along the Slave river as far as Chipewyan on lake Athabaska, where also there is a hospital. In common with the other medical officers of the Department's medical service—Dr. D. S. Bruce stationed at Chesterfield, Hudson bay; Dr. R. D. Martin at Coppermine, Arctic coast; Dr. H. A. Stuart at Pangnirtung, Baffin island; and Dr. J. A. Urquhart at Aklavik—Dr. Morrow will also act as the coroner and as medical officer of health of his district. The Department of Indian Affairs and the Department of the Interior co-operate in maintaining doctors at Resolution on Great Slave lake and at Simpson on Mackenzie river.

Dr. Urquhart, who visited Ottawa at the end of last year on official business, arrived at Aklavik the day before Christmas, having been slightly delayed on his journey north from Edmonton by mild weather, a thaw having made the ice unsafe for landing for the plane which was equipped with skis. Dr. Urquhart's district is typical of the conditions under which medical service is carried on in the North, the area under supervision extending some 350 miles from Arctic Red river in the south to Herschel island on the north-west and stretching along the coast 450 miles eastward to Baillie island. With Aklavik, where there are hospital facilities, as the centre of the "practice," the doctor travels by dog-team in winter and by motor boat in summer, in addition to answering emergency calls by aeroplane.

Last winter the doctor journeyed 3,500 miles by dog-team, and during the

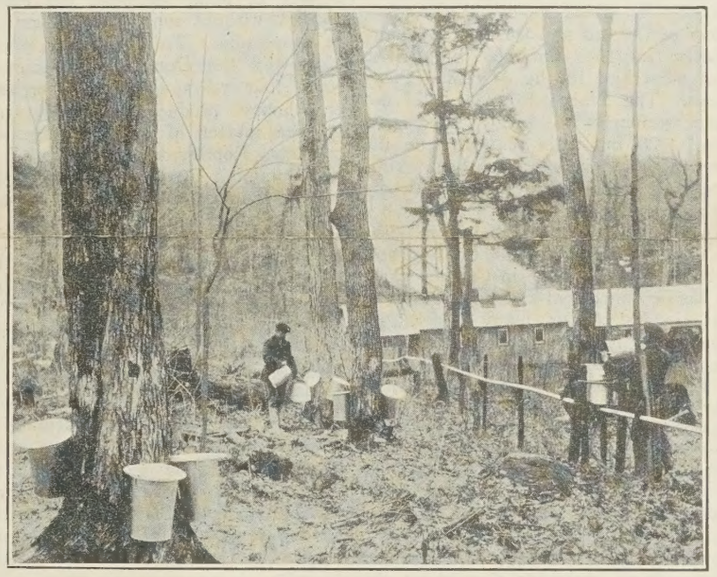
(Continued on page 2)

CANADA'S MAPLE SUGAR INDUSTRY

Modern Appliances Improve Quality—Quebec is Most Important Producer

The clear, sunny days of March bring the first crop of the new year—the harvest of maple sap and its delectable products. In by-gone days "maple sugar making" on the farms was a sort of picturesque adventure. Supplying the domestic needs was the main incentive and the question of catering to an outside market received little consideration. The crude open-kettle methods in vogue differed little from those of the Indian of still earlier days and produced often the dark-coloured and strong-tasting syrup that results from old-fashioned ways. But while it is true that happy "sugaring off" parties still hold their merry revels careless of petty discomforts, yet in the conduct of the industry as a whole, striking changes have been effected during the past 30 or 40 years.

During the present century the business of making maple products has in general been systematized and organized. This change has been marked by the use of labour-saving machinery, the greater elimination of waste, the expansion of markets, the emphasis on quality of goods, the introduction of co-operative methods, and the encouragement by government agencies and legislation. This industry is confined to four eastern provinces and more particularly to Quebec and Ontario. The last census showed a total of about 50,000 Canadian farmers or other maple-grove owners in the business, with some 8,000,000 trees being tapped annually. Of this total, 85 per cent were in Quebec, 14 per cent in Ontario, and 1 per cent in the Maritime Provinces. Quebec accounts for nine-tenths of the maple sugar and three-fourths of the syrup produced in Canada.



Canada's Maple Sugar Industry—The modern sugar maker selects, if possible, a hillside grove, places his sugar house at the bottom and erects each spring a temporary system of metal pipes. The sap collected on the hill is poured into these pipes and is carried by gravity into the collecting tanks at the sugar house below.

In regard to sap flow and the prices obtained, 1930 was a good average year. The following table gives the maple crop production by provinces for the past two years:—

MAPLE SUGAR

Province	Year	Quantity Lbs.	Price per Lb. Cents	Value Dollars
Nova Scotia.	1929	106,242	34	36,122
"	1930	82,894	33	27,355
New Brunswick	1929	54,079	29	15,683
" "	1930	66,711	32	21,348
Quebec.	1929	11,112,534	18	2,000,256
"	1930	7,576,204	16	1,212,193
Ontario.	1929	426,070	26	110,778
"	1930	482,467	25	120,617
All Canada.	1929	11,698,925	18	2,162,539
"	1930	8,208,276	17	1,381,513

MAPLE SYRUP

Province	Year	Quantity Gals.	Price per Gal. Dollars	Value Dollars
Nova Scotia.	1929	8,105	2.49	19,957
" "	1930	3,464	2.54	8,799
New Brunswick	1929	9,208	2.42	22,283
" "	1930	2,725	2.08	5,668
Quebec.	1929	1,666,880	1.73	2,767,021
"	1930	1,538,199	1.56	2,399,590
Ontario.	1929	489,981	2.34	1,146,556
"	1930	640,991	2.27	1,455,050
All Canada.	1929	2,174,084	1.82	3,955,817
"	1930	2,185,379	1.77	3,869,107

The total value of maple products in 1929 was $6,118,856 and in 1930 $5,250,620.

(Continued on page 3)

CANADA'S PART IN GEODETIC UNION WORLD CONGRESS

IMPORTANT GATHERING AT STOCKHOLM, SWEDEN

Dominion Among the Leaders in Geodetic Triangulation, Levelling, and Research Work

Canada took a prominent part in the deliberations at the Fourth General Congress of the International Geodetic and Geophysical Union held at Stockholm, Sweden, last autumn. Mr. Noel J. Ogilvie, D.L.S., M.E.I.C., Director of the Geodetic Survey of Canada, Department of the Interior, and Chairman of the National Committee of Canada of the International Geodetic and Geophysical Union, was the official representative. Other delegates were Mr. W. E. W. Jackson, Assistant Director, Meteorological Service, Department of Marine and Fisheries, Toronto, and Professor E. L. Bruce, Queen's University, Kingston, Ontario.

The International Geodetic and Geophysical Union is divided into the following sections:—Geodesy, Oceanography, Seismology, Meteorology, Volcanology, Terrestrial Magnetism and Electricity, and Scientific Hydrology. The object or purpose of the Union is to promote the study of problems relating to the shape and physics of the earth; to initiate and organize the conduct of researches which depend on co-operation between different countries and provide for their scientific discussion and publication; to facilitate particular researches, such as the comparison of instruments and methods used in different countries. The National Committee of Canada of the Union was formed in 1920.

The initial meeting of the General Assembly was opened by the President of the National Committee of Sweden in the Concert House at Stockholm, and the remaining meetings were held in the Parliament House adjoining the Royal Palace. The Section of Geodesy, being the largest of the several sections belonging to the Union, occupied one of the two principal chambers.

The delegates numbered 250, representing forty-two countries. Seven countries were reported as recently adhering to the Union while German representatives were present for the first time since the World War. An outstanding feature of the Congress was the presentation of national reports. Canada submitted a statement of the progress of geodetic operations in the Dominion since the previous meeting of the Union.

(Continued on page 3)

GOLD MINING INDUSTRY HAD SUCCESSFUL YEAR*

Value of Production Higher Than For 1929 —Ontario Leads Provinces in Output

The Canadian gold industry has just completed the most successful year in its history so far as the value of production is concerned. The Dominion Bureau of Statistics' estimate of the value of gold production for the calendar year 1930 is $43,000,000, an increase of some $3,500,000 over the 1929 output. As this increase was attained before the new facilities provided for in the various expansion programs of many of the gold properties were in full operation it is accordingly reasonable to expect another record year for 1931. Much credit for this substantial increase is due to the greater production from the three large Kirkland Lake mines—Lake Shore, Teck-Hughes and Wright-Hargreaves—as the output from the older Porcupine area was somewhat lower than in 1929. The new mill of Dome Mines Limited, in this area, built to replace the one destroyed by fire, did not commence production until November, 1930.

Ontario still continues to be the leader in the production of gold and in 1930 the output from this province was eighty-two per cent of the total Canadian production. British Columbia is second and Quebec third.

The estimated production of lode gold for British Columbia for 1930 is $3,183,457, an increase of six per cent as compared with 1929. The greater part of the lode gold output comes from the Premier mine at the head of Portland canal; the Pioneer mine in the Lillooet Mining Division, near Bridge River is next in importance. Production from the latter property increased steadily during the past year and its future prospects are very encouraging. During the year the new mills at the Union property at Franklin Camp and at the Reno mine in the Kootenay Lake area, near Sheep Creek, were put into operation. The Nickel Plate mine south of Princeton, B.C., contributed its usual production and several smaller properties combined to swell the total output. Keen interest is being taken in the search for new properties in the province, especially in the Nelson district. The output of alluvial gold from the Yukon Territory showed an increase as compared with 1929.

The gold production from Manitoba during 1930 was principally from the Central Manitoba mine; the copper-zinc ores of the Flin Flon mine of the Hudson Bay Mining and Smelting Company, also contributed gold to the output of the province. This property will become an important producer of the metal when capacity production is reached. Prospecting for gold was fairly active in northern Manitoba during the summer of 1930, and a number of gold showings were trenched and sampled.

Both the Porcupine and the Kirkland Lake areas of northern Ontario were very active especially near the close of the year. Lake Shore Mines Limited are now treating 2,000 tons of ore a day, and Teck-Hughes are increasing their mill capacity from 900 to 1,250 tons a day. Wright-Hargreaves are gradually increasing their daily tonnage and are at present reported to be handling 700 tons a day. Development work at all three of these mines has been very successful. Kirkland Lake Gold Mining Company, Limited, continued an active underground development campaign throughout the year with encouraging results. During the year Sylvanite Gold Mines Limited paid their initial dividend and toward the end of the year Wright-Hargreaves again resumed the payment of dividends after a lapse of about two years. McIntyre Porcupine Mines, Limited, are erecting a new 2,000-ton flotation mill at their property in the Porcupine area. It is expected that the mill will be ready for operation in April. The Dome's new mill is already in operation and the Hollinger continues to meet with success in underground development work.

In western Quebec, Noranda Mines, Limited, continue to produce a copper ore high in gold. The gold is collected by the blister copper during the smelting operations and is subsequently recovered when the copper is refined. The present monthly value of gold production from Noranda is reported to be about $300,000. The Siscoe mine, south of Amos, was a steady producer of gold throughout the year. Near Rouyn, the Granada Gold Mines Limited put their new mill into production.

** Prepared at the direction of Dr. Charles Camsell, Deputy Minister, Department of Mines, Ottawa.*

GROWTH OF BEEKEEPING INDUSTRY*

Canadian Honey Ranks High in World Markets—Interesting Sidelights on Apiculture

The smallest member of Canada's family of domesticated live stock, the honey bee, has been rapidly advancing in importance, and in 1930 which was a poor honey year in many parts of the Dominion, the total production, it is estimated, amounted to no less than 31,169,635 pounds, having a value of $3,428,659.85.

Just when bees were first brought into Canada with successful results is not known. An observer writing in the year 1749 noted that experiments with bees in Canada had not been successful, and he assigned as the probable cause the severity of the winters. However, the early colonists were not to be daunted by a few apparent failures and by the middle of the next century beekeeping had become established in the Maritime Provinces, and possibly in Quebec as well, for according to Mr. Vaillancourt, the agricultural statistics of that province in the year 1870 show that a total of 648,000 pounds of honey was produced. From this time onward beekeeping spread rapidly in the provinces of Ontario and Quebec, and more slowly in the province of British Columbia and in the Maritime Provinces. The Prairie Provinces did not take seriously to honey production until 1920, but from that time on the growth of the industry has been extraordinary, especially in Manitoba where production jumped from 903,000 pounds in 1923, to 10,110,128 pounds in 1930.

The production of honey has now advanced to the stage in Canada where it has become a real industry. Practised as a side-line for many generations beekeeping has only within recent years been developed along scientific lines.

The amount of honey produced throughout the Dominion is to a great extent governed by the weather conditions, but the main problems confronting the beekeepers of Canada, namely wintering, disease, and swarm control, are gradually being overcome by the application of scientific methods which have been evolved through extensive research work organized by the Dominion and Provincial Governments.

Prior to 1920 all the surplus honey that was produced in the provinces of Ontario and Quebec was shipped to the western provinces where there was a ready market. Just as soon however, as the Prairie Provinces, especially Manitoba, started producing honey in large quantities, Eastern Canada had to find a new outlet for her surplus honey crop. Since that time, 1924, Canadian honey has been shipped in varying quantities to the United Kingdom, The Netherlands, France and Germany.

Owing to the great variety in colour and flavour of the honeys produced in the Dominion, it was found impossible to maintain any uniformity in the quality of honey supplied the export market, without some form of grading or inspection. This fact was appreciated by the Dominion Government some four years ago just after eastern honey producers seriously took up the matter of entering European markets. Representations were made to the Dominion Government asking that all honey intended for export be examined before shipment was made. An inspection system was inaugurated and as a result the Canadian product has made considerable progress on the markets of the United Kingdom. This is evident by the price realized, which is second only to that secured by New Zealand which country has had compulsory grading for a number of years.

That there is a growing demand in the British Isles for Canadian honey of a uniform grade is evident from the fact that while there were shipped 509,755 pounds in 1926, in the year 1929 Canada's export of honey to the motherland amounted to 1,213,229 pounds.

In the year 1925 the total estimated number of pounds of honey produced in the Dominion was 19,342,978, whereas last year which was an average year for honey, the total estimated production was 31,169,635 pounds.

The estimated production by provinces was as follows: Prince Edward Island, 10,000 pounds; Nova Scotia, 63,731 pounds; New Brunswick, 100,000 pounds; Quebec, 5,500,000 pounds; Ontario, 12,000,000 pounds; Manitoba, 10,110,128 pounds; Saskatchewan, 685,551 pounds; Alberta, 1,578,900 pounds; British Columbia, 1,121,235 pounds.

People talk glibly of the busy bee, but how very few realize the stupendous amount of energy that is expended in garnering this crop. Sitting down to partake of breakfast how many people pause to think that the jar of honey standing so temptingly on the table represents the life work of many bees? A honey bee weighs approximately one five-thousandth part of a pound, and during the honey flow on each trip she carries approximately half her own weight of nectar. It requires approximately ten thousand flights to gather a pound of nectar. Nectar loses about half its weight through evaporation and as each return flight averages about two miles, it is evident that bees must travel at least forty thousand miles in order to provide the contents of that sixteen-ounce jar of honey on the breakfast table. Working at such high pressure the average life of a honey bee is but six short weeks in the summer. Bees born after the summer rush have an average life of seven months.

** Prepared at the direction of Dr. J. H. Grisdale, Deputy Minister of Agriculture, Canada, by Mr. C. B. Gooderham, Dominion Apiarist.*

ADD FLOWERPOT ISLAND TO GEORGIAN BAY PARK

Its Inclusion in National Park Means Protection of Interesting Rock Formations

Flowerpot island situated in the mouth of Georgian bay at the extreme northern end of Bruce peninsula, has been added to the Georgian Bay Islands National Park. This island was surrendered by the Chippewa Indians in 1856 and since then has been held in trust by the Department of Indian Affairs, from which department it was purchased by the Department of the Interior.

The island owes its name to very interesting rock formations which take the shape of two picturesque white limestone pillars which stand in bold relief against the lake horizon like two immense flowerpots on the edge of the water. One of these is fifty feet high with a top about twenty-five feet in diameter and a base of six or seven feet, while the smaller pot measures thirty feet in height with a top of fifteen feet diameter and a base similar to the first one.

The peculiarity of shape is due to the action of the waves against the bases of the rocks, carving them out until they have taken on this appearance of flowerpots. Small trees growing in the interstices of the rocks accentuate the resemblance. It is the intention of the Department to reinforce the bases of the two pillars with concrete to prevent any further erosion by the elements.

Another interesting feature of Flowerpot island is the series of large caves about fifty feet above the lake level which have been carved out of the cliffs by water action. One cave is about a hundred feet in depth by nearly twenty feet high. It is formed of three arches through which one may look out over the waters of Georgian bay, providing a wonderful vista.

Flowerpot island is easily accessible by ferry from Tobermory harbour in Ontario, and the forty-mile road from Wiarton to Tobermory is being improved and widened to make the trip attractive to tourists.

CANADA GUARDS NATIVES' HEALTH IN FAR NORTH

(Continued from page 1)

summer covered 1,600 miles, mainly along the Arctic coast in the hospital boat *Medico*. This boat is equipped to carry a number of patients. In addition to the hospital work, there are certain defined regular patrols, and with regard to emergency calls it has been Dr. Urquhart's experience that the Eskimos never request help unnecessarily and make ideal patients.

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OTTAWA, FEBRUARY, 1931

CANADA'S PART IN GEODETIC UNION WORLD CONGRESS

(*Continued from page 1*)

In this record for the period from January 1, 1927, to December 31, 1929, it was shown that important progress in first-order triangulation with its allied operations—the measurement of first-order base lines and the determination of Laplace stations—and in first-order levelling, first-order traverse, geodetic astronomy, and isostasy had been made. Special activity was noted in mathematical research, and in the publication of geodetic results.

It was reported that during the year 1929 very successful use was made of aeroplanes in triangulation operations, including the selection of routes for triangulation nets, the actual selection of triangulation stations, and the transportation of observing and other parties from point to point. In all more than 300 hours were flown for the Geodetic Survey of Canada during the year 1929. So far as is known the first application of aerial methods to geodetic operations in any country was carried out in Canada by an officer of the Geodetic Survey in 1921.

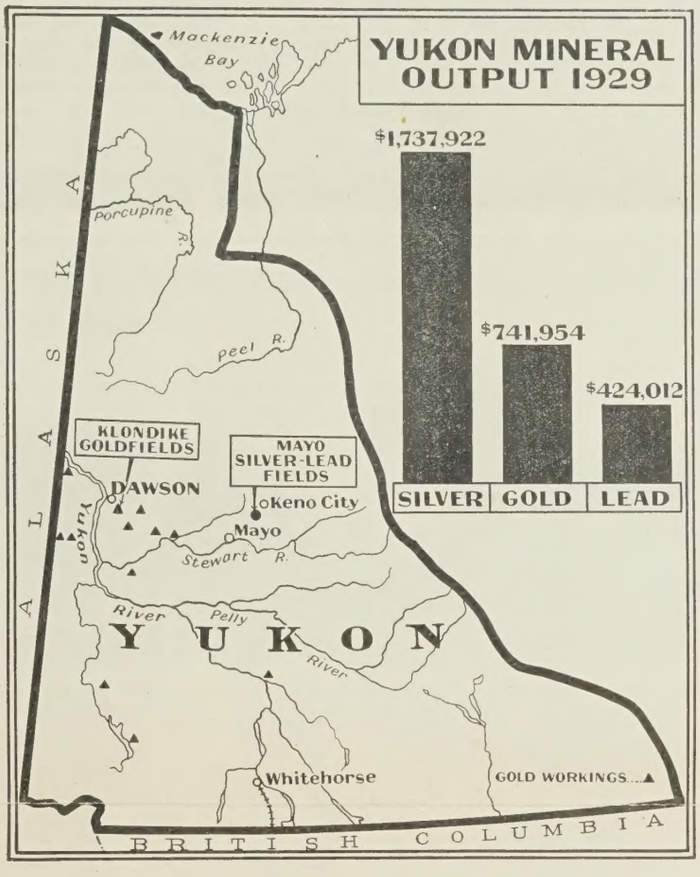
During the period 1927-29 inclusive, steady progress was recorded on the various parts of the control net of Canada. At the end of 1929 the area of completed first-order triangulation was about 187,000 square miles, of which some 33,000 square miles was completed in the three years 1927-1929 inclusive. On an additional 42,000 square miles the reconnaissance, or selection of stations has been finished. The first-order triangulation nets have had 1,767 miles added to their length, as against 1,441 miles in the previous three-year period, making a total length to date of about 6,800 miles of primary control.

A total of 2,564 miles of levelling was added to the Canadian level net, 1,614 miles of this being designated as precise levelling and 950 miles as secondary. The precise levels have been carried almost exclusively along railway tracks while the secondary levels, on the other hand, have in general been carried along highways.

Other work included the following:—Seven first-order base lines were measured for control of lengths of triangulation. Fifteen triangulation stations have been occupied as Laplace stations (longitude and azimuth), thirty-five triangulation stations were observed for longitude and latitude for deflection of the vertical and isostasy investigations, and the longitude and latitude were determined at five stations on the Manitoba-Ontario boundary line and on Hudson bay in the vicinity of Churchill. The adjustment of precise level lines in Canada was continued, until, at the end of the period, what is called the 1928 Adjustment was completed. This is the ninth in the series of adjustments carried out and embraces all precise levelling done in Canada up to the end of the season 1928.

THE YUKON AS A MINERAL PRODUCER

Yukon Territory, fallen from its former high estate as a gold producer, still contributes much more to the mineral output of Canada than most persons realize. Silver has dethroned gold as the chief mineral product, but



the Territory continues to turn out each year a substantial yield of the yellow metal. Lead has become a third important item. Copper and coal are also included in the Yukon's mineral wealth, but silver, gold and lead are the big three.

CANADA'S MAPLE SUGAR INDUSTRY

(*Continued from page 1*)

It is interesting to observe how greatly the relative proportions of sugar and syrup vary in the different provinces, as shown by the following table:—

Relative Proportions of Maple Sugar and Syrup Produced in Canada. Average during 2-year period, 1929-30.

Province	Sugar Per cent	Syrup Per cent
Nova Scotia	61	39
New Brunswick	54	46
Quebec	37	63
Ontario	7	93
All Canada	32	68

For all Canada, very close to one-third of the total production is sugar and two-thirds syrup. The maple sugar output from year to year varies in almost direct ratio with the prevailing market price of cane sugar. Thus the cane-sugar-famine year of 1921 was the peak year of this century for maple sugar production, while for the two-year period since 1928, the steadily falling price of cane sugar has induced an average annual decrease of 22 per cent in the maple sugar output.

In so far as the supply of virgin maple trees is concerned, there is yet an abundant opportunity for enlarging the maple syrup industry. It is estimated that not over one-quarter of the available hard maples in Canada are being tapped. The best remaining opportunities are no doubt to be found within the extensive Crown forests of Eastern Canada, as in 1929 some eighty permits were issued for the operation of "sugaries" on Crown lands.

The Forest Service of the Department of the Interior estimates that the total stand of sugar maple in Eastern Canada is approximately 60,000,000 trees. Records compiled in Canada show that each tree tapped yields on the average two and a half pounds of sugar annually. Based on the calculation that at least one-third of the maple tree stand is easily available for tapping purposes, it is seen that a possible total yield of 50,000,000 pounds per year is a reasonable assumption. The other two-thirds of our maple trees may thus be regarded as a reserve for further expansion in the future.

Beautiful Maligne Lake

The largest and perhaps the most beautiful of all the lakes in Jasper national park, Alberta, is Maligne lake, which has already taken its place among the great landscapes of the world.

CO-OPERATE IN STUDY OF CANADIAN BIRD LIFE

Voluntary Observers Assist Department of the Interior by Reporting on Waterfowl Conditions

The value of a more intimate knowledge of the habits and movements of the migratory birds of this continent in the advancement of conservation and protection is widely realized. In Canada, the United States, and Mexico wild life conservationists are co-operating in a study of the lines of migrational flight of the different species as they pass northward to Canada for the annual breeding season and again southward to the winter feeding grounds. Of all the birds protected under the terms of the Migratory Birds Convention between Canada and the United States, ducks and geese are probably the best known. Both sportsmen and wild life lovers are intensely interested in the propagation of these species, the former for the sport they provide and the latter for the opportunities for observation and photography.

The waterfowl supply is not only of interest to Canada, but also to our neighbours in the United States and Mexico. It is estimated that between seventy-five and eighty per cent of the ducks and geese of North America are raised north of the Canada-United States boundary. A very large share of the continent's duck supply is hatched in Manitoba, Saskatchewan, and Alberta. During the last few decades great changes have taken place in the southern parts of these provinces where the most important of the duck nesting grounds are found. Settlement and agricultural development have curtailed the breeding areas, and when dry conditions prevail, shrinking the shallow lakes and marshes, the effect on the duck supply of the continent is marked.

The opinion has been frequently expressed that if the ducks were driven from their prairie breeding ground by the necessary invasion of agriculture they would just retreat to some northern fastness to breed. A study of the known breeding ranges of most of the species of ducks of Canada which are of interest to the sportsman, shows that most of northern Canada is outside of the breeding range for these species, and it would be exceedingly unlikely for prairie nesting species to nest elsewhere. That large part of Canada which is covered by the pre-Cambrian shield is not essentially a duck breeding area. However, investigations are under way to find exactly how important this vast section of Canada may be in the production of ducks and whether its usefulness in this connection can be improved.

The geese are more essentially northern breeders than are the ducks and that may be why races of Canada geese as well as other species of geese have maintained their numbers so well, even in the face of very persistent pursuit and hunting in the more southern parts of the continent.

In an effort to add to the store of knowledge concerning ducks and other waterfowl throughout Canada, the Department of the Interior has enlisted the voluntary co-operation of several hundred waterfowl observers. Each of these observers reports upon the status of waterfowl in his area during four periods of the year and tells in general terms whether ducks or geese were plentiful, fairly common, or scarce. He is further invited to comment on changes which have occurred in the abundance of waterfowl over periods of years and to state the cause for any change, if possible.

(*Continued on page 4*)

TOPOGRAPHIC MAPPING PLAYS IMPORTANT PART

Accurate Maps Aid Development—Progress Made During the Past Year

It may well be said that the rate of progress of a new country depends in no small degree on the extent and accuracy of its mapping. Settlement and development advance more surely and more rapidly with the aid of maps and in a country of such wide expanses as Canada, mapping is playing an increasingly important part in its progress.

The Topographical Survey of the Department of the Interior is devoting its efforts to the extension of the mapped area of the Dominion and a comprehensive national topographic mapping program has been arranged so that the work may proceed contemporaneously throughout various portions of the country in accordance with the immediate necessities as they arise.

Standardization of the methods employed in bringing to fruition the effort of the mapper, namely, to produce modern, up-to-date maps of all Canada, together with the application of the modern science of aerial photography, tends to render possible the prosecution of the work with speed and economy.

This work as carried on includes the gathering of the field information by the officer on the ground; the laying down of the necessary secondary and tertiary control; aerial photography (where aerial photographic machines are used in the taking of oblique and vertical photographs in co-operation with the Royal Canadian Air Force); the compiling of this information in the office, its plotting, and other necessary preparation until the final map is "set up," lithographed, printed and ready for its ultimate distribution to the Canadian public.

During the past calendar year all these various steps were, as usual, undertaken. The sheets of the National Topographic series, a regular series of map sheets designed eventually to cover the entire Dominion and based upon parallels of latitude and meridians of longitude, have been augmented to the extent of one sheet on the one-mile scale, five sheets on the two-mile scale, and eight sheets on the four-mile scale. In addition a considerable number of other map sheets have been produced.

The sheet on the one-mile scale covers one-quarter of a degree in latitude and one-half a degree in longitude or approximately 400 square miles in the vicinity of the forty-ninth parallel. This sheet covers a district southwest of the city of Calgary in Alberta.

The sheets on the two-mile scale cover four times the area of those on the one-mile scale and those issued were as follows: Petawaga and Kempt Lake over two neighbouring areas lying north of Ottawa in the province of Quebec; Hudson, over an area in the vicinity of lac Seul; and Parry Sound over an area northwest of Toronto in Ontario; and Merritt over an area in the vicinity of Nicola lake in British Columbia.

The sheets on the four-mile scale cover four times the area of those on the two-mile scale. The four-mile sheets issued during the past year were the Winnipeg, Selkirk, Waterhen, Hecla, Sipiwesk, and Cross Lake sheets in Manitoba, the Fitzgerald sheet in Alberta, and the Dryden sheet in Ontario. In these areas, with their resources of pulpwood, water-power, minerals, and tourist possibilities, the four-mile scale maps serve the initial purpose of assisting in bringing to light these resources and placing them, as it were, before the eyes of those interested in such development.

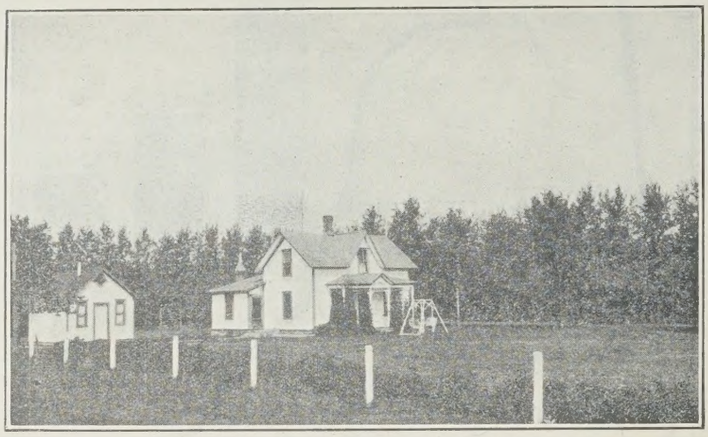
In addition to the sheets of the National Topographic series, sheets not conforming to this series and produced generally for special purposes, were issued covering various portions of the country. For instance it might be mentioned that a number of one-mile sheets were produced of the Malpeque Bay area in Prince Edward Island in order to assist in the administration of the oyster leases in that area by the Federal Department of Fisheries, which has taken them over from the Provincial Government.

SHELTERBELTS ON PRAIRIE FARMS

Beneficial Effect of Trees on Social and Economic Life of Western Farmers

During the planting season of 1930 there were sent out from the forest tree nurseries of the Forest Service of the Department of the Interior and planted on farms in the Prairie Provinces more than 6,000,000 little trees—seedlings and cuttings—bringing the grand total of trees so supplied and planted since this work was begun by the Department in 1901 to over 116,000,000. Figures so large as this require to be analyzed before their significance can be realized. To enable them to be more easily visualized it may be stated that this planting stock has been sent out to over 100,000 applicants and a careful review of the returns of the Forest Service inspectors shows that in spite of all opposing causes—fire, flood, insects, and neglect—80 per cent of all the plantations set out on the Canadian prairies under this plan in the last thirty years are now flourishing and vigorous. These thriving plantations cover 32,000 acres or 50 square miles. The area covered might be pictured as a strip of forest a mile wide stretching from the western limits of Winnipeg to the eastern outskirts of Portage la Prairie. Such a strip would be small in the vastness of the prairies but a comparison like this would not be fair because the plantations are strategically placed for the purpose intended in the very best positions. A comparison of the total area covered with the total number of plantings shows that the average plantation is 1,936 square yards or nearly half an acre in extent.

There is another point that must not be forgotten. The plantations recorded are only those for which the planting material was sent out from the Forest Nursery Stations at Indian Head or Sutherland, but once a plantation is established it becomes a source whence seeds and cuttings are drawn to start plantings on other farms in the neighbourhood. Thus it has been found that the work goes on with increased pace with each new windbreak set out. The mainspring of the tree-planting movement is to increase the production of the homestead and the comfort of the dwellers in the farm home. That production of grain crops is increased has been amply proved and the windbreaks about the farm home and barnyard add to the comfort of the family and to the protection of the live stock.



Shelterbelts on Prairie Farms—The cosy homestead shown above is located on what fourteen years before the picture was taken was bare prairie. The trees which came as tiny seedlings from the Department of the Interior's forest nursery station are now, in many cases, forty feet high.

Of late years there has been a marked tendency toward the diversification of the products of prairie farms. Dairying, the raising of poultry, and beekeeping have made important gains and these and other new lines of activity have been assisted by the tree-planting movement. The establishing of gardens—a direct result of the introduction of shelterbelts—with the consequent producing of tender vegetables and bush and tree fruits, has resulted not so much in adding to the variety of commodities the farmer has to sell as in increasing the number of things he has for his own use. The strawberries, raspberries, tomatoes, melons, plums, and apples now grown by many prairie farmers in their tree-sheltered gardens, are not largely sold but they improve the dietary and increase the health and pleasure of the farm dwellers. An analysis of the reports of the inspectors showed that on the 7,600 farms visited during the year, 6,800 had well kept gardens, 2,700 had plots of small fruits, and 400 carried orchards containing fruit-bearing trees. A prairie bye-word in years gone by was, "Grow another five acres of wheat and buy your vegetables and fruit," but the returns of recent years show that the farmers are realizing that it pays better to grow these things in the farm garden.

All the benefits of prairie tree planting set out above are material and have a cash value. There is the other side—that of sentiment—which, though it cannot be reduced to dollars and cents, is very powerful. The automobile is now a very common means of travel and if anyone who thinks that sentiment does not count with our farmers will keep his eyes open on a motor trip through any part of Canada he will soon see by the dignified and appropriate names which our farmers give their holdings that they regard their places not as factories but as homes. And the two subjects with which the names most frequently deal are trees and views—Maple Lodge, Cedar Grove, Elmvale, Oak Knoll, Forest View, Fairview, Shady Lawn, Poplar Point. Everyone will recognize these as typical farm appellations and the recurrence of these and similar names can only mean that the farmer is greatly affected by his surroundings, and that his contentment in particular is increased by having trees about his home. These benefits, material and of sentiment, are doubtless the causes why for thirty years, in good season and bad season, the tree-planting movement has continually spread. Applications to receive trees for planting in 1932 are now being received by the Superintendent, Forest Nursery Station of the Department of the Interior at Indian Head, Saskatchewan, and those interested will receive full information as to the plan on application.

PETROLEUM PRODUCTION IN ALBERTA CONTINUES HIGH

October Output Sets New Record—Slight Drop in November

Comparative tables of petroleum production in Alberta during the months of October and November, 1930, compiled in the Department of the Interior from the reports of operators show that in October a new monthly output record was established. The October total was 159,860 barrels, an increase of 30,853 barrels over the previous high mark established in September, 1930. In November the total production was slightly lower than the previous month, the figures being 150,352 barrels.

The comparative tables follow:—

	Light Naphtha Crude Barrels	Heavy Crude Barrels	Total Barrels
October, 1930. .	150,040	9,100	720 159,860
October, 1929.. .	94,940	7,505	1,090 103,535
November, 1930..	140,128	9,630	594 150,352
November, 1929..	93,241	8,444	2,455 104,140

CO-OPERATE IN STUDY OF CANADIAN BIRD LIFE

(Continued from page 5)

By this census system, very valuable statistics have been gathered and the work still continues. It has been used to substitute definite knowledge for guesswork in the recording of waterfowl conditions in the various parts of Canada. There is room for additional observers, especially in some parts which are not well covered at present, and any person who is interested in birds, and feels that he can add materially to the knowledge of the Department respecting waterfowl conditions is invited to communicate with the Commissioner of National Parks, Department of the Interior, Ottawa, Canada.

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RIDING MOUNTAIN NATIONAL PARK

Official Opening of Manitoba's Scenic Playground During Coming Summer—Its Many Attractions

The latest addition to Canada's splendid system of national reservations—Riding Mountain Park, Manitoba—will be officially opened to the public during the coming summer. The new park, which formerly formed part of the Riding Mountain Forest Reserve, covers an area of 1,148 square miles. It will present a typical example of Manitoba's mountain country, rough, broken terraces on the east rising to a wide, wooded tableland set with beautiful little lakes which slopes gently on the west in broad steps to the Assiniboine.

The picture of Manitoba as a prairie province has become so deeply impressed upon popular imagination in the eastern parts of Canada, that it will no doubt come as a surprise to many to learn that she, too, possesses what might be called a *mountainous* region. The range of hills, which extends along the whole western boundary of the broad alluvial plain in which lie lakes Winnipeg, Manitoba, Winnipegosis and Dauphin, rises in places to an elevation of 2,700 feet. The highest point of Riding mountain is 2,200 feet, or more than 1,200 feet above the surrounding country. The new park will, therefore, offer to visitors many of the attractions of altitude—pure dry air scented with spruce and balsam, abundant sunshine, and stimulating ozone.

The eastern part particularly is well wooded with poplar, birch, spruce, balsam and jack pine. Towards the west the forest thins out and green glades, where wild flowers grow in luxurious profusion appear. In places eastern hardwoods such as oak and elm, may also be found. The escarpment dates its creation to glacial times. Morainal débris in the form of large boulders is found in many places throughout the park and particularly on the beaches of its several lakes.

These lakes undoubtedly form one of the chief attractions of the park. Their spring-fed waters are clear and pure like true mountain lakes, and their colours possess the same jewel-like brilliance. Clear lake, which has been chosen as the park headquarters, is the largest and finest. It lies among wooded hills, with curving bays and clean, sandy beaches which makes it delightful for boating or bathing. A motor campsite has already been laid out equipped with spring water, shelters, stoves and other conveniences and a caretaker will be in charge during the coming summer.

Riding Mountain Park at one time formed part of the hunting grounds of the Assiniboine and Cree Indians and the district is still the natural home of big game. Moose and deer roam in considerable numbers, and as one travels along the trails a black bear will often be seen ambling through the bushes and gazing with curiosity at the human intruders. One of the largest herds of elk in the country, numbering it is said between two and three thousand, also makes the park its home while beaver and other fur-bearing animals are also found. A herd of buffalo is being introduced and will be kept in a fenced enclosure. As time goes on, under the sanctuary conditions existing in all National Parks, this wild life must become one of the great attractions for visitors, since even more readily than in the mountain parks, people will be able to come into close touch with these beautiful and interesting wild creatures and to

(Continued on page 4)

Riding Mountain National Park—This entrancing view along the north shore of Clear lake in Riding Mountain National Park gives an idea of the beauty and attractiveness of Manitoba's new scenic playground.

FOREST PROTECTION IN THE WEST

Hon. Thomas G. Murphy, Minister of the Interior, Issues Message to Western Provinces

Statement on the forest fire situation in Western Canada by Hon. Thomas G. Murphy, Minister of the Interior:—

"The well-being of the forest industries is so vital to Canada's general prosperity that the Federal Government must always retain an active interest in them. This interest necessarily includes serious concern with respect to forest fire losses. The Department of the Interior has a peculiar interest in the situation in the Prairie Provinces. There is, in the first place, the large area of federally owned forest in the National Parks which is endangered by fires in surrounding territory; there is the general responsibility for pressing forward the subject of forest conservation throughout Canada; and lastly there is the natural feeling of good-will toward the new forest protective organizations of the Prairie Provinces, the majority of whose staffs have been recruited from personnel formerly connected with the field force of the Department of the Interior.

"Present indications are that these forest services are going to be faced with a very trying fire season during 1931. Weather conditions prevailing in Western Canada during the past three years have been remarkable for a continued deficiency both of snow and rainfall. Added to the accumulated effect of the drought conditions experienced, there is the fact that throughout this region precipitation during the past four months has also been considerably below normal. The result is that lakes and streams are at very low level, irrigation storage waters being likewise affected.

"The forest fire season 1929 was one of the most critical in the history of Western Canada. The season 1930 was likewise a trying one although there was a considerable improvement over the year before in the matter of forest fire losses. This improvement was due in part to increased efficiency of fire protection, but particularly to a growing sympathy on the part of the general public, a state of mind that was given practical expression in efforts to co-operate in the matter of fire prevention.

"Inasmuch as the forest resources of the Prairie Provinces now belong wholly to the residents of those provinces it may be expected that public concern and public co-operation looking to reduction in fire losses will be even more evident. Nevertheless the mild winter and negligible amount of snowfall experienced throughout Western Canada to date means that, unless this region is favoured with exceptional precipitation in the next two months, the new western forest services must be prepared for a repetition of the extremely hazardous conditions which have marked the past three years. The efforts of these new services will have to be backed wholeheartedly by the general public because it will be only through the exercise of every precaution in the use of fire in or adjacent to the forest that disastrous fire losses in 1931 can be avoided.

"While the effect of forest destruction by fire is felt primarily in the region affected, nevertheless the losses incurred influence the general economic situation throughout the country. It is with this point in mind that I would call the attention of our western citizens to the necessity of unremitting care in the use of fire throughout the wooded regions."

STUDY SUNSPOTS AND THEIR EFFECT ON LIFE

Dominion Observatory, Department of the Interior, Engaged in This Research

While the size and composition of the heavenly bodies and their distances from the earth and from one another are of immense moment to the astronomer, nevertheless the final object of all this study is the application of the acquired knowledge for the good of mankind. Many are the benefits resulting from astronomical research. Means have been discovered for protecting our ships at sea, for assisting in the survey of lands, the finding of minerals, and many other things which conduce to man's safety and comfort.

A most important astronomical study is that of sunspots and in this study the Dominion Observatory, Department of the Interior, Ottawa, has for a number of years taken a prominent place.

It is known that the sun is not a constant body; it has brighter and darker areas (sunspots) which are changing in number and extent in an irregular manner with a prominent period of average length a little more than eleven years. Accompanying this variation there are apparently rather small changes in the solar energy received at the earth, but a strikingly large change in ultra-violet light. This light ionizes the upper atmosphere of the earth, producing electric currents which affect terrestrial magnetism, the northern lights, and likely produce cloud-nuclei in the lower atmosphere. Ultra-violet light also exerts an important direct influence on living things.

Many investigations have been carried on, the world over, in the search for consequences of the sunspot cyclical changes. Effects have been indicated in rainfall, temperature, cloudiness and storminess, and in various forms of life and economic conditions. Apart from the scientific interest, it is important to ascertain the extent of such effects throughout Canada.

Records for long periods are needed in this search. There are faithfully kept meteorological records in many places in Canada, some extending over fairly long periods. These records when analyzed, show some striking effects of the sunspot influence. For example, Edmonton precipitation shows a 56 per cent range in the eleven-year period, with a maximum one year before the minimum of sunspots; the temperature for the same time (1883-1925) shows a variation of 2°·8 F. in the cycle, with maximum at the minimum of sunspots. The temperatures at Toronto and Montreal for the years 1873-1925 show a similar effect. Many stations have been examined, and the evidence points to the widespread influence of sunspots.

Records of living things are scarce; however, old trees exhibiting variation in the widths of the annual rings of growth afford record of living conditions, in many places for centuries. With the co-operation of various branches of the Dominion Government service and of others, tree sections have been secured by the Observatory from many parts of Canada. The eleven-year sunspot cycle seems to be revealed in the trees already measured, but with variations in different regions. A section of a butternut which grew at the Dominion Experimental Farm, Ottawa, exhibits a 58 per cent range in the growth rings for the average sunspot cycle. Spruces, including two pre-glacier specimens of Sitka spruce, usually show nearly a 20 per cent range during the eleven-year cycle.

Weather fluctuations are serious factors in living conditions, and it is not surprising that they are reflected in such records as are available of fur-bearing animals, grouse, grasshoppers, etc. In general, rabbits are most numerous about the sunspot minimum and scarce at maximum, and with this variation the animals which prey on the rabbit must also vary, in addition to direct changes resulting from the climatic pulsations. A record kept in Manitoba, when analyzed in relation to the eleven-year sunspot cycle shows striking correlation. Individually and combined, the records exhibit the sunspot cycle, grasshoppers at a maximum at the minimum of spots, grouse at a maximum about a year after.

Astronomers feel that fuller knowledge of the sunspot cycle will eventually assist in permitting long-range weather forecasts of a general nature, and will thus provide valuable information in relation to forest protection, wild life conservation, and other matters of social and economic importance.

CONSERVING CANADA'S NORTHERN WILD LIFE

Fur-bearers Form Source of Supply of Food and Clothing for Natives—Department of the Interior's Work

The wild life of the Canadian North forms the source of supply of food and clothing for the native population of that region and the conservation of this valuable resource is an important part of the work of the North West Territories and Yukon Branch of the Department of the Interior. For a number of years decreases have been noted among the principal fur bearers of the North, while changes in the migrational routes of certain of the big game animals have in some areas resulted in hardships for the native population. A study of the changing conditions by officers of the Department of the Interior has resulted in the declaration of close seasons on certain species and the making of provisions for the introduction of reindeer to assist the natives.

In 1929 the purchase of 3,000 reindeer in Alaska by the Department of the Interior was approved and in December of that year the work of driving or herding these animals from the west coast of Alaska to the eastern side of the Mackenzie valley was begun. The movement of this large herd attracted nation-wide attention and its progress has been followed with the keenest possible interest. In the spring of 1930 the herd had reached the Hunt river in the Kotzebue Sound area, where a halt for the fawning season was called. The herd remained in this vicinity for the entire summer while the fawns, which were estimated at close to 2,000, gained strength for the continuation of the drive northeastward.

Before the second stage of the drive was entered on late in 1930, a large number of animals were cut out of the herd and returned to Kotzebue on the west coast of Alaska so as to bring the herd down to its original proportions. The movement was then begun northeastward toward the pass leading to the Colville River watershed. Reports received late in January indicated that good progress was being made through the pass and when the 1931 fawning season arrives in April it is expected that the drive will have reached the delta of the Colville river on the north coast of Alaska. Thus only about four hundred miles of travel along the coast to the east will remain before the herd is safely in its new range to the east of the Mackenzie delta. Officers of the reindeer company and of the Northwest Territories and Yukon Branch are of the opinion that the delivery of the herd will be made sometime during the winter of 1931-32.

Preparations for the reception of the herd near Kittigazuit on the Canadian Arctic coast just east of the delta of the Mackenzie have been practically completed. Corrals, buildings and other range equipment have been erected and everything put in readiness for the handling of the big herd.

In other matters concerning the welfare of the natives, the Department of the Interior has been equally active. The Minister of the Interior has kept in close touch with the changing situation in the Northwest Territories as regards the supply of fur-bearers, the lower fur prices, owing to depressed world markets, and the consequent effect upon the condition of the natives.

On February 20, 1928, an Order in Council was passed authorizing the declaration of a close season on beaver in the Mackenzie district for a period of three years from the 1st of October of that year, it having been shown that intensive trapping of this valuable fur-bearer was seriously reducing his numbers. Health conditions among the natives during 1928 made it necessary to modify this order in council and in November of that year authority was granted to permit Treaty Indians and half-breeds to take a limited number of beaver sufficient to provide them with food and other necessities. Again this year representations were made to the Minister that—because of the scarcity of fur-bearing animals in the Mackenzie district and the lower prices owing to the general economic depression—conditions warranted a further modification of the close season.

Authority was therefore granted under Order in Council of January 14, 1931, to permit one member of each Indian family or each half-breed family leading the life of Indians to trap in the Mackenzie district not more than fifteen beaver between January 15 and May 15, 1931, where the needs of such family warrant such an exception being made in the opinion of the Royal Canadian Mounted Police who act as game officers and represent the Department of the Interior. If the native applying for the permit is responsible for the support of more than one family he may be granted permission to take fifteen beaver for each additional family. It is also provided that licensed traders may accept the pelts of beavers so taken with the responsibility of making a complete return to the Department of the Interior.

As a further measure of assistance, authority was granted by the Minister of the Interior for the killing of fifteen buffalo from the herd in Wood Buffalo park, near Fort Smith, Northwest Territories. This action was taken as a result of an appeal from those in charge of the mission hospitals and schools in the upper Mackenzie area for a supply of fresh meat. The animals slaughtered were chiefly outcast bulls. The slaughtered buffalo will scale on the average about 1,000 pounds dressed so that a considerable supply of fresh meat has been provided for the mission schools and hospitals at a time when it was greatly needed.

FIXING THE ONTARIO-MANITOBA BOUNDARY

Engineers of Geodetic Survey of Canada, Department of the Interior, Had Difficult Task

During the summer of 1930, the Geodetic Survey of Canada, Department of the Interior, carried out the difficult task of establishing, astronomically, two points on the unsurveyed section of the Ontario-Manitoba boundary between Island lake and Hudson bay. In addition, the terminal point of this line was located astronomically on the Hudson Bay coast according to the provisions of the Act of Parliament of 1912 dealing with this provincial boundary. According to statute, commencing at the boundary between Canada and the United States, the boundary between the two provinces follows a straight line drawn due north through the northwest angle of lake of the Woods, to the intersection of the centre of the road allowance at the 12th base line of the Dominion Land Surveys system. The longitude of this meridian section of boundary was officially determined to be 95° 09′ 11″·61 west of Greenwich. At the 12th base line the boundary is deflected to the northeast and extends in a straight line to the east end of Island lake. From Island lake the statutory boundary is defined as a straight line extending to the point where the 89th meridian of west longitude intersects the south coast of Hudson bay.

The section of the interprovincial boundary from lake of the Woods northward to the 12th base line and thence northeasterly to Island lake had already been surveyed and marked on the ground. The remaining section from Island lake to Hudson bay had not been established or surveyed. Due to a lack of exploration in this section of country little or no knowledge was available of the territory through which this line would pass. As a preliminary step to sending out engineers to survey the line on the ground and erect the necessary boundary monuments, it was necessary to establish by precise observations, the boundary terminal on the Hudson Bay coast. When this was done the initial azimuth (true direction) at Island lake of this 280-mile line could be computed and made available for the commencement of the work of demarcation. As a further aid to the surveyor engaged in running this line, it was decided to photograph from aircraft a strip of country from Island lake to Hudson bay following as closely as possible the theoretical boundary. From the photographs it was planned to plot a provisional strip map showing the main water routes and topography of such great importance to the surveyor in planning his travel routes and field operations. Unfortunately at the present stage of development of aerial navigation it is impossible to navigate a machine in a straight line along a theoretical line 280 miles in length over an unmapped area. The Geodetic Survey of Canada was therefore asked to co-operate in this undertaking and to establish two intermediate points at intervals on the theoretical line as well as to locate the boundary terminal by the methods of precise, or as it is better known, geodetic astronomy. The surveyor conducting the subsequent aerial photographic operation would then have at his disposal at intervals along the line, known points on which to check his course.

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OTTAWA, MARCH, 1931

USE OF AEROPLANE IN MINERAL DEVELOPMENT*

Rapid Advance in Northern Canada Has Been Made Possible by Modern Aircraft

In the past, travel and transport in Northern Canada has been, at least, a slow and laborious business. Access to the coastal areas has been easy by sea and during the open season of navigation the river and lake steamers ply on the larger lakes and the Mackenzie River and Yukon River systems. Beyond this, however, the sole method of travel till 1920 was the dog-team in winter and the canoe or pack-train in summer.

The advent of the aeroplane wrought a remarkable change, and to-day no district in continental Canada is more than one, or at the most two days' flight from the end of steel. Travel and transport by air throughout the North are now organized so that access to its remotest corners is safe, comfortable, and speedy. Mining activity has made this possible. The converse is equally true, for aviation has made possible the extension of prospecting, geological surveys and preliminary development work into areas hitherto almost inaccessible.

Canadian aviation has always been closely associated with the development and conservation of our natural resources. When aircraft for civil uses became available after the Armistice, the forester, crying out for better means of transport and observation over the northern forest belt, eagerly adopted the seaplane as a means of increasing his efficiency, and the surveyor early realized the possibilities of the aerial camera as an aid to rapid mapping. The geologist and prospector followed their example and adopted air transport immediately aircraft suitable for their purposes were produced. Forest protection and aerial surveys have been developed very largely as Government services. Air transportation, on the other hand, has been almost wholly a commercial venture, and Canadian transport services are unique in that they are self-supporting and depend on no Government subsidy. This is almost altogether due to the demand for flying from mining and prospecting companies.

The first regular air route in Canada was established in 1924 to give fast communication with the Rouyn mining district. This service was carried on daily from Haileybury, Ontario, to Lake Osisko, Quebec. The service was maintained by flying boat, and during the first summer over 1,000 passengers, 15,000 letters and telegrams, and 78,000 pounds of freight were carried. The service continued until the railway reached Rouyn, when it was discontinued, though aircraft are still employed in the district flying passengers and supplies to outlying claims and prospects from the rail-head.

The gold strike in the Red Lake district, in the autumn of 1925, just before the close of navigation, provided another outlet for the infant industry, and during the winter several air transport companies were formed with bases at Sioux Lookout and Hudson, Ontario, to operate services to the new field. No railway has yet been built into the district and air transportation has remained the quickest and easiest method of transport and travel throughout northwestern Ontario and eastern Manitoba. Sioux Lookout and Hudson are now well established bases where aircraft of the most modern types are available at all seasons of the year.

The next activity was from The Pas, Manitoba, following the development of the Flin Flon properties and the Cold Lake discoveries in the fall of 1926. The construction of the Hudson Bay railway has improved communications in northern Manitoba and the stimulus of these remarkable finds led to the extension of prospecting all through the province. The discoveries at Rottenstone Lake and elsewhere in northern Saskatchewan have provided fresh outlets, and services are now run from Prince Albert to many points in the northern part of the province. Similar services are being run in northern Alberta, the Northwest Territories, the Yukon, and in northern Quebec.

The climate and physical character of Northern Canada are favourable for flying. There are few mountains, the climate, though cold in winter, is dry, and visibility is good. Flying is held up at times by blizzard conditions, but the saving of time is so great that the loss of a day or two is negligible and good weather may be waited for. The great river systems and the myriads of lakes which cover the whole area provide readymade landing grounds, both in summer and in winter.

Efficient aircraft, suitable for the purpose, took some time to develop. The early winter services to Rouyn and the Red Lake district suffered from lack of proper equipment. To-day, with modern air-cooled engines and all-purpose aircraft fitted for operations on skis, floats or wheels, the services are remarkably efficient, and it is a tribute to the skill and care of the pilots engaged in the northern development work that no passenger has yet lost his life on any of their services and that thousands of tons of supplies have been delivered safely without loss all through the North. Many mining towns are now served with air mail services run under contract with the Post Office Department.

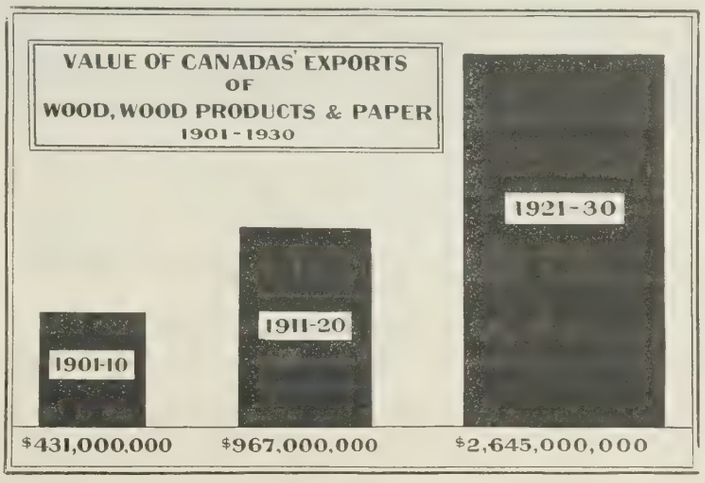
There is no doubt that the mining areas in northern Canada have been developed many years ahead of expectation, because of this increased ease of transport throughout territory hitherto practically inaccessible. Mining engineers and executives have been able to inspect areas hundreds of miles from civilization. Exploration companies are able to place prospectors in the field without loss of valuable time in travelling and can maintain them there, move them from location to location, receive regular reports on the progress of their work, prompt news of any important discoveries and, in fact, control their operations in a way which would be impossible without air transport.

**Digest of a paper prepared for the Empire Mining Congress at the direction of Mr. G. J. Desbarats, Deputy Minister of National Defence, by Mr. J. A. Wilson, Controller of Civil Aviation.*

FOREST PROTECTION IS TRADE PROTECTION

Thirty years is commonly regarded as being the length of one generation, and it is more than probable that Canadians will some day look back upon the last generation—the first thirty years of this century—as the golden age of expansion in Canadian forest industry. It would be almost too much to expect that the Dominion should in any future generation repeat, or even approach, the growth that has taken place since 1900 in the export of forest products. If the present trade can be maintained, that in itself will be a real achievement.

During the first ten years of this century Canada's exports of wood, wood products and paper aggregated roundly $431,000,000. The second decade saw



this figure more than doubled, rising to $967,000,000, and in the last ten years, 1921-30, it shot up to the colossal sum of $2,645,000,000. Taking the whole thirty-year period, 1901-30, the value of Canada's exports of wood, wood products and paper exceeded the almost unbelievable amount of $4,000,000,000.

Canada may, right now, have reached the zenith of her career as an exporter of forest products. Whether that be so or not, it is amply clear that the Canadian people, of all peoples, cannot permit the appeal for forest conservation—however hackneyed it may sometimes seem—to fall upon deaf ears. For Canada, forest protection is trade protection of the most vital order.

REVISED FIGURES FOR ALBERTA'S 1930 OIL OUTPUT

Complete Record Shows Total Production Was 1,433,844 Barrels—December Was Highest Month

Oil production in the province of Alberta reached the high total of 1,433,844 barrels during the year 1930, according to revised figures compiled in the Department of the Interior and based on the reports of operators. The December total, which showed the highest monthly output on record, was 175,572 barrels.

An analysis of the figures for 1930 shows that 1,313,039 barrels of naphtha were produced in Turner Valley during the year. Seventy-three wells contributed to the naphtha total, forty-four producing during seven or more months of the year. The production of light crude came from fifteen wells, eight of which were also naphtha producers.

Comparative figures for the month of December, 1930, and the same period in 1929, as well as production totals for the whole of last year appear below:—

December Production, 1929 and 1930

	Naphtha (brls.)	Light Crude (brls.)	Heavy Crude (brls.)	Total (brls.)
December, 1930...	165,799	9,226	547	175,572
December, 1929...	82,915	8,599	2,840	94,354

Production Figures For Year, 1930

	Naphtha (brls.)	Light Crude (brls.)	Heavy Crude (brls.)
Turner Valley.....	1,314,039	50,545	.....
Red Coulee.....	.....	53,917	.....
Wainwright.	.....	.....	9,739
Ribstone	.....	.....	1,873
Skiff.	.....	.....	3,731

Total Production, 1,433,844 barrels.

FIXING THE ONTARIO-MANITOBA BOUNDARY

(Continued from page 2)

Geodetic engineers in establishing the boundary terminal proceeded down the Nelson river in canoes and made their way southeasterly along the coast a distance of 170 miles. At the point where the 89th meridian of longitude was found to intersect the coast, the boundary terminal was established and marked permanently on the ground by the erection of a substantial concrete monument. The position of this monument, marking the most northerly limit of Ontario was made more easily identifiable from the air by mapping the neighbouring shore lines and other topographical features.

In the location of the two intermediate points on the theoretical boundary between Island lake and Hudson bay, aircraft were used for transportation. Flying over this unmapped area, the aircraft were directed by the methods of aerial navigation until a lake was found approximately on the line of the theoretical boundary. Landing on the lake an astronomical observation for position then permitted a calculation to be made of the distance and direction from the observed station to the boundary. By repeated trials, using this method, two points were established close to the theoretical line—one on Black Duck lake about 90 miles east of Gods lake and the other near Sturgeon lake shown on most maps of northern Manitoba on the upper reaches of the Shamattawa river. These points when shown on sketch maps of the local areas will serve to guide the aviators on the subsequent aerial photographical operation, preparatory to the actual work of demarcation.

CANADA'S LEADING HYDRO POWER SYSTEMS

Department of the Interior Gives List of Eighteen With Largest Output in 1929

The large hydro-electric power systems of Canada are defined as those interconnected undertakings under a common control and management that have each an annual output of 100,000,000 kilowatt-hours or more. The growth of such systems is of particular interest as illustrating the modern tendency towards interconnection and unified control. Interconnection promotes reliability of service; unified control makes possible the highest class of expert advice and increases the economy and efficiency of operation.

The Dominion Water Power and Hydrometric Bureau of the Department of the Interior has made an annual study of these systems since 1922, at which time there were seven such systems with a total output of about 6,602 million kilowatt-hours. By 1929 this had grown to eighteen systems with a generated output of nearly 17,000 million kilowatt-hours, these being all classed as "central electric power stations," and this output accounted for nearly 93 per cent of the total amount generated by all central electric stations in the Dominion. It is, however, the total output including that purchased that determines the scope of operations and service to the public by each system—for instance the Montreal Light, Heat and Power Consolidated purchases over one-third of the energy it distributes to its customers.

The eighteen systems generating over 100,000,000 kilowatt-hours each in 1929 stood in order of their total output as follows:—

1. Hydro-Electric Power Commission of Ontario.
2. Shawinigan Water & Power Company.
3. Duke-Price Power Company.
4. Gatineau Power Company.
5. Montreal Light, Heat & Power Consolidated.
6. Price Brothers and Company.
7. Winnipeg Electric Company (including Manitoba Power Co.).
8. Canadian Niagara Power Company.
9. West Kootenay Power Company.
10. City of Winnipeg Hydro-Electric System.
11. British Columbia Electric Power Corporation.
12. Canada Northern Power Corporation.
13. Abitibi Electric Development Company.
14. Dominion Power and Transmission Company.
15. Southern Canada Power Company.
16. Huronian Company.
17. Calgary Power Company.
18. Great Lakes Power Company.

Of the above systems the first five exceeded a thousand million kilowatt-hours each, the Hydro-Electric Power Commission of Ontario leading with over four thousand million. These great hydro-electric power systems are well distributed from coast to coast—Quebec has 6, Ontario 7, Manitoba 2, Alberta 1, British Columbia 2. It is of interest to note also that it can be shown that in proportion to its population Canada has attained greater development of these highly modern large electric power systems than any other country.

Canada's Leading Hydro-electric Systems—Aerial view of the Ile Maligne development of the Duke-Price Power Company on the Saguenay river, Quebec. The capacity of this plant is estimated at 495,000 horse-power and the output places it third among the leading systems in Canada.

CANADA'S ATLANTIC COAST FISHING INDUSTRY

Exceptionally Large Landings of Salmon and Lobsters Indicate These Fisheries Are Being Maintained

Canada's Atlantic coast fishing industry had its share of difficulties in 1930, due chiefly to disturbed and unfavourable market conditions, but the year's operations were marked by several noteworthy and gratifying features, such as the exceptionally large catches of salmon and lobsters, and the evidence thus given that the stocks of these fish are being maintained. Landings of salmon by commercial fishermen engaged in the sea fisheries of the four Atlantic provinces went far beyond previous totals and the catch of lobsters was the largest since 1917. The facts indicate that conservation efforts put forth by the Dominion Department of Fisheries have been effective, and they should allay any apprehension that depletion of the lobster and salmon resources has been taking place.

As shown by unrevised statistics compiled by the Department of Fisheries, lobster landings in 1930 in Atlantic waters—the only waters in which the lobster fishery is carried on—totalled more than 41,000,000 pounds, an increase of nearly 3,800,000 pounds over the catch made in 1929. At the same time unfortunately, market conditions were such that the increase in landings in 1930 was not accompanied by an increase in the landed value of the catch to the fishermen, which amounted to $3,625,000, in round figures, or a decrease of something more than $200,000.

In 1917 the lobster catch amounted to more than 47,000,000 pounds. In the following year there was a sharp decrease. There were fluctuations in the catch in the next few years but in no year did the landings approach the 1917 total. Since 1927, however, the trend has been upwards, as shown by the following table:—

1927	31,683,100	pounds
1928	32,243,700	pounds
1929	37,282,000	pounds
*1930	41,073,700	pounds

(*Unrevised figures)

With the increase in catch there also came, of course, an increase in the production of canned lobsters. Present figures show a pack of 138,266 cases during 1930, or 10,750 cases more than in 1929, and 17,375 cases more than the average annual production in the five-year period, 1925-1929. While the lobster pack increased, there was also notable further development of the export business in fresh lobsters, a branch of the lobster industry which has been increasing rapidly in importance of late years. All told, more than 9,600,000 pounds of live lobsters were shipped to the United States during 1930, as compared with something more than 8,000,000 pounds in the preceding year and a little more than 5,000,000 pounds in 1928. A factor of importance in increasing this business, which added nearly $2,280,000 to Canada's export trade in 1930, was the operation of a lobster collection and transport service between eastern Nova Scotia and Boston under the auspices of the Department of Fisheries.

IN THE SALMON FISHERY

The Atlantic coast salmon fishery is not comparable with the great British Columbia fishery in magnitude of operations but it is of importance and the fish are of such excellent quality that the evident maintenance of the stock is a reason for much satisfaction. Incidentally, it was an interesting coincidence that 1930 brought record catches of salmon on both coasts although the Atlantic salmon (*Salmo salar*) and the Pacific salmon (*Oncorhynchus*) are of different genera.

The catch made by Atlantic sea fishermen in 1930 was approximately 6,348,000 pounds, or almost eighty per cent more than in 1929. In 1925—to give one or two interesting comparisons—the catch was 5,735,200 pounds; in 1920 it was 1,915,900 pounds; in 1915, 3,902,900 pounds; in 1910, 3,015,400 pounds; and in 1900, 2,126,300 pounds. In each case the figures are those showing the landings by commercial fishermen in the sea fisheries only.

Salmon landings in the sea fisheries showed large percentages of gain in all four of the Atlantic provinces in 1930, but in Prince Edward Island waters the salmon fishery is on a very small scale. New Brunswick fishermen landed over 3,332,000 pounds, the Nova Scotia men more than 1,620,000 pounds, and Quebec's catch was better than 1,384,000. In each case the catch was almost twice as large as in the previous year.

The Spruces of Canada

The spruces of Canada play an important part in the industrial life of the country and are an asset not fully appreciated by the general public. There are five spruces of commercial importance in Canada, the white, black, and red spruces of the East and Prairie Provinces; and the Sitka and Engelmann spruces of British Columbia.

STRIP MAP FOR USE IN FLYING IS ISSUED

Topographical Survey, Dept. of the Interior, Completes Map of Winnipeg-Regina Air Mail Route

Map making is commonly credited with being one of the most ancient of the arts. The desire to illustrate his travels, or to boast of them probably induced early man to put his ideas down in the form of primitive sketchings which may be considered as the forerunners of our maps of to-day. These crude beginnings presently gave way to more permanent forms such as recording on the skins of animals, graving on wood or stone (as with the early Chinese maps), and painting on silk or cloth which developed later into printing on paper.

Although map making is one of the most ancient of the arts, it never ceases to reach out for new and modern ideas together with better methods of applying such ideas to its own purposes. A generation ago the science of heavier-than-air aviation was not yet born. Now, however, aviation has progressed so far that it is a commercial actuality, with aerial photography for mapping as one of its offspring.

In the matter of map production, aviation has reached the stage of demanding for itself. The Topographical Survey, Department of the Interior, has just issued a strip map covering the aerial mail route from Winnipeg to Regina. This map is in two sections which may be joined together to make one long strip. One side of the map presents information of interest to the aviator—high voltage transmission lines which are always dangerous for the airman, airports, light beacons, seaplane anchorages, and air lanes—all in glaring red. Other important features from the airman's viewpoint are shown in bold colours so that the map can be easily read as the route is flown. Fourteen colours in all are used. Elevations are indicated in steps of 500 feet by different tints, quick changes being shown by hachures. On the other side of the map is shown a profile of the whole route and large scale drawings of airports and intermediate aerodromes in regular order.

RIDING MOUNTAIN NATIONAL PARK

(Continued from page 1)

study their ways of life under almost entirely natural conditions.

The park will be readily accessible by motor highway from all parts of the province and within easy reach of both the transcontinental railway lines. The distance from Winnipeg is approximately 175 miles. The approach will be by way of Dauphin on the north and by Brandon, Neepawa and Minnedosa on the south. A new motor highway is now being built by the Department of the Interior from Clear lake to Norgate Station, a distance of approximately twenty miles, which will tie up with a good road running north and south along the east boundary of the park and connecting with the provincial road system. Four good highways also lead to the international boundary, so that the park will be readily accessible to visitors from the United States, over a district embracing all points south to Grand Forks, Fargo and Minneapolis. When once the holiday possibilities of the park become known Manitoba may expect a large and increasing influx of motorists from the country across the line.

NATURAL RESOURCES CANADA

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CANADA'S RECREATIONAL RESOURCES AS A COMMERCIAL ASSET

SURVEYING CANADA'S FORESTS BY AIRCRAFT

Protection and Appraisal of Forest Resources From the Air—Co-operation Between Federal Services

The use of aircraft in the protection and appraisal of the forest resources has been perhaps the most important factor in the post-war development of aviation in Canada. The vast forest areas in which means of transportation were slow and laborious, but which nevertheless demanded adequate protection from fire and for which information was required as to the available supplies of timber, provided a useful field for the employment of the trained airmen whose brilliant accomplishments during the war brought fame and honour to the name of Canada.

In these days, when mail and passengers are carried by plane on regular schedules, winter and summer, and the drone of the aeroplane engine is a commonplace to the forest dwellers and even to the Eskimos in the Arctic, it is hard to realize that it is less than twelve years since aircraft were used in Canada for other than military and what might be termed "stunt" purposes.

In the spring of 1919 the first demonstration of the utility of aircraft in forestry work was made. Two flying boats of the H.S. 2 L. type were lent by the Dominion Government for this experiment and it was proved that planes could be used to advantage in locating fires, transporting men and equipment to extinguish them and in mapping timber tracts.

In the same year, the Federal Government created an Air Board to control commercial flying, conduct flying operations for civil services of the government, and organize the air defence of Canada. Aircraft and equipment to the value of about $5,000,000 had been presented to the Dominion by the Imperial Government and a number of flying boats used by the Royal Canadian Naval Air Force during the war were on hand.

The Department of the Interior conducted a series of investigations of aerial photographic surveys, under the immediate direction of the late Dr. E. Deville, at that time Surveyor General. Methods of mapping from aerial photographs were developed as a result.

In 1923, aviation was placed under the Department of National Defence and the Royal Canadian Air Force was established. Though a military organization, the R.C.A.F. has each year undertaken a large program of civil opera-

(Continued on page 2)

Hon. Thomas G. Murphy, Minister of the Interior, Broadcasts Appeal For Greater Development of Our Tourist Trade

(Address by Radio, April 9, 1931)

"Ladies and Gentlemen:

"A few years ago a widely-known Canadian made the remark 'It is in many ways an exhilarating experience, that of living in a new country and in a time of rapid development.' Nearly everyone will agree that the citizens of Canada have enjoyed that experience to a degree not equalled by the people of many other countries. We have the good fortune to live in a land where we have been accustomed to see national progress going forward by leaps and bounds—so much so, indeed, that any interruption in that advance is an occurrence which we are very much inclined to look upon with impatience. That is a natural result of the fact that the whole history of Canada, during the lifetime of most of us, has been one continuous series of what we may call great waves of development, rolling forward one after another in quick succession.

"We have only to cast our minds back over the years of the present century to realize how one tide of development had scarcely reached its crest before another made its appearance. First, we had the swift spreading out of settlement over the unoccupied prairies of the West. Hardly had that huge settlement movement passed its zenith when we saw it followed by the phenomenal rise of the pulp and paper industry in the forests of Eastern Canada. And close upon the heels of the era of rapid expansion in the pulp and paper industry came a period of spectacular progress in the opening up of the Dominion's mineral resources. Coupled with these developments there have been equally striking advances in other directions, notably in the harnessing of water power and in the many different fields of manufacturing. And still more recently we have witnessed the rise of one of the most amazing developments of all—the one of which I wish particularly to speak to-night—the growth of tourist trade to the point where it has become almost universally recognized as one of the Dominion's foremost business interests.

VALUE OF CANADA'S TOURIST TRADE

"The increase in tourist travel, and the volume of business that such travel creates, is literally one of the marvels of our generation. The magnitude of modern tourist business not only in Canada but in the United States and in European countries, is almost incredible. If anyone had stood up, say twenty years ago, and told a Canadian audience that we, in this country, would some day reckon the value of our tourist trade from abroad in terms of hundreds of millions of dollars he would probably have been laughed at—yet that day has already arrived.

"Taking the latest official figures, those for the year 1930, we find that tourists from other countries are estimated to have spent in this Dominion approximately $280,000,000. That is an enormous sum of money to be spent in that manner in one year. It amounts to an average of nearly a million dollars a day for every business day throughout the twelve months. It means that the tourist trade in one year poured into the channels of Canadian business an expenditure which almost equals the combined capital and reserve funds of all the Canadian banks. It is no wonder that the tourist industry or trade has recently engaged the close attention of the leading figures in the public and the business life of Canada not only by reason of its present importance but also because of the great possibilities for expansion which can undoubtedly be realized if, as a people, we take full advantage of our opportunities.

PUBLIC SUPPORT TO TOURIST DEVELOPMENT

"Now, under modern conditions as they exist to-day, it is more or less taken for granted that governments should give whatever assistance lies in their power to extend the development of a country's resources and to promote also the general building up of its business interests. That applies to virtually every progressive country. Here in Canade we have in the national government a Department of Agriculture devoted to the strengtheining of our agricultural industry and commerce. The federal Departments of Mines and of Fisheries are similarly engaged in their respective fields. The advances of water power and forestry developments have for years received the aid of specialized services in the Department of the Interior. The tourist industry or trade, or whatever it may best be called, now ranks with agriculture, mining, forest and fisheries development as one of our major business interests, and I want to say something about what has been done, and is being done, to give it a reasonable degree of federal support and encouragement. A brief reference to

(Continued on page 3)

TRIANGULATION SYSTEM IS RAPIDLY LAID OUT

Geodetic Engineers of Department of the Interior Make Amazing Record in Northern Ontario

Quite an amazing record, when compared with the possibilities a few years ago, was made by Messrs. J. L. Rannie and F. P. Steers of the Geodetic Survey of Canada, Department of the Interior, during January and February, 1931. In a period of four weeks they laid out by aeroplane a system of triangulation in northern Ontario, which would have taken several years to accomplish by older methods of transport by canoe and back-packing.

In two Royal Canadian Air Force planes these Geodetic Survey officers selected the sites for triangulation stations in a strip of country about 800 miles long (including branches) and from 15 to 30 miles wide from Sudbury to the northwest end of lake Nipigon. The branches extended towards Timmins and Nakina on the north and towards Sault Ste. Marie and Port Arthur on the south.

To divide up the area into suitably sized sections three bases were chosen from which to operate. In the selection of these bases three important considerations had to be borne in mind, viz., the base must be on a lake large enough for aircraft to land and take off, it should be on the railway to facilitate transportation of oil and gasolene for refuelling, and it must be possible to secure board and lodging for the personnel of the party, seven in number. The first two qualifications were not difficult to find, but the third was not so easy.

The aircraft used on the operation were very speedy cabin monoplanes, fitted with skis and carrying equipment to enable them to operate from bases remote from regular aerodromes. By means of bell-shaped nose tents and collapsible wood-burning stoves the engines could be thoroughly warmed before starting, even when extremely low temperatures such as forty degrees below zero were experienced. Emergency equipment, consisting of rations, sleeping robes, tent, rifle, snowshoes, axes, etc., was continuously carried in each aircraft. The performance of the planes throughout the whole operation was most satisfactory, thanks largely to the very efficient pilots and crews, who kept the engines and aeroplanes functioning under somewhat unfavourable conditions.

(Continued on page 3)

MOHAWK INSTITUTE'S 100th ANNIVERSARY*

Residential School Near Brantford Celebrates Centennial This Year—Progress of Work

One of the features of Indian educational activity in Canada is the close co-operation of the Department of Indian Affairs with church organizations. This joint effort of churches and state in the care and training of young Indians has been productive of much of the success which has marked the attempt to make our Indians self-respecting and self-supporting members of their respective communities.

It was early recognized that to enable the Indians to become useful members of the community a broad educational policy was necessary, and this was responsible for the wide development of the residential and day school plan now being carried out. There are now 78 residential schools maintained by the Department, along with 272 day schools, making in all a total of 350 centres of Indian educational activity with a total number of pupils of over 15,700.

An important unit in this system is the Mohawk Institute near the city of Brantford, Ontario, which this year is celebrating the one hundredth anniversary of its founding. The history of this institute is a most interesting one. In 1649 a missionary society called the New England Company was established in England for the evangelizing of the natives of the British Colonies in America, and soon after began work in the New World. After 1776 its main activities were transferred from what had then become the United States, to British territory,—first in New Brunswick, and later to the present site of the institute.

In 1828 the New England Company established a day school which, in 1831 was enlarged and became a residential vocational school under the direction of the Church of England. The increasing number of pupils necessitated several enlargements of the buildings, and in 1859 the frame buildings were abandoned for a new three storey brick edifice housing 90 pupils.

In 1903 the main buildings as well as several outbuildings were totally destroyed by fire and these were replaced by the present structures. The main building which is of brick has two classrooms, four dormitories, a study room, recreation room, sewing room, manual training room, hospital ward, and a laundry fully equipped with the most modern appliances. The school has accommodation for 78 girls, and 64 boys, together with a staff of 12.

This school following the usual practice adopts the public school curriculum as prescribed by the Provincial Department of Education. After passing the high school entrance examination the pupils go to the Brantford Collegiate, although still residing at the Mohawk Institute. Agriculture forms one of the important subjects taught at the school, and a farm of some 270 acres with modern up-to-date farm buildings together with a variety of live stock is maintained by the Department for instructional purposes. In addition there is also a large greenhouse where the pupils are given a course in horticulture. The girls, as well as taking the usual academic course, are also trained in domestic science and hygiene.

The Mohawk Institute has trained a number of teachers who have given, and are giving, splendid service among their own people, and the advance in agriculture and the improvement in home conditions on the Six Nations Reserve is to an appreciable extent due to the work of this institution.

Prepared at the direction of Dr. Duncan C. Scott, Deputy Superintendent General of Indian Affairs, by Mr. Russell T. Ferrier, Superintendent of Indian Education.

Mohawk Institute's 100th Anniversary—The above photograph shows the substantial brick structure of the Mohawk Institute near Brantford, Ontario. The building has accommodation for 142 pupils, both boys and girls, and the twelve members of the staff.

SURVEYING CANADA'S FORESTS BY AIRCRAFT

(*Continued from page 1*)

tions. Due to the co-operation with the Forest Service and Topographical Surveys of the Department of the Interior and other departments of the Government, methods of conducting aerial surveys have been developed which have placed Canada definitely in the lead of other nations of the world, in this field.

Aerial forest surveys are conducted in three ways, by sketching, oblique photography and vertical photography.

Sketching is difficult in unmapped territory and is necessarily inaccurate as to details, but where there is good ground control it is of great assistance as a preliminary to ground cruising. Photography provides, however, a permanent and mathematically correct record of the ground conditions which can be studied at leisure for any purpose desired such as topography, geology, agriculture, water-power, or forestry.

Oblique photography which is essentially a Canadian method of survey, is applicable to large areas where a fine degree of accuracy is not required, and the ground is fairly level. From these photographs it is possible to map both the topographical features and the forest types for three miles on each side of the line of flight and prominent features can be located at even greater distances. By this system 360 to 600 square miles can be photographed in an hour, depending on the speed of the plane.

Transparent grids which take care of the perspective have been worked out by the Department of the Interior for various altitudes, focal lengths of camera, distance from the grid centre to ground plumb and the distance from the margin to the apparent horizon. These grids which are subdivided into sections ten chains square, when superimposed on the photograph, enable the mapping of the area with sufficient accuracy for most purposes.

Vertical photography is more accurate than oblique but, owing to the smaller area covered, the cost is considerably increased. Vertical photographs are usually taken from higher altitudes, 5,000 to 13,000 feet, or even higher and the scale varies with the altitude and the focal length of the camera.

The photographs are taken with an end overlap of about 60 per cent and a side overlap of from 20 to 40 per cent. Variations in the scale of the photos is taken care of by the system of radial control in plotting.

Since the numerous lakes in most of our forest regions make ideal conditions for the use of flying boats and the lack of smooth open landing spaces precludes the use of wheels, most of our aerial surveys have been conducted during the summer. There are dry areas, however, where neither water nor smooth landing places are available, and summer flying is precluded. Since 1928-9 the Forest Service has been conducting winter aerial surveys with planes equipped with skis and the winter pictures are, if anything, better for forest mapping than summer pictures because the conifers (evergreens) stand out in much greater contrast from the deciduous (leaf-shedding) trees and the shadows are longer and more distinct, enabling the measurement of tree heights with greater accuracy.

Up to date the Dominion services have photographed 380,940 square miles for topographical purposes, 115,065 square miles vertically and 265,875 obliquely, and the forests have been mapped on 89,440 square miles. In addition the provinces of Quebec, Ontario, and British Columbia, and several of the pulp and paper companies have conducted extensive aerial surveys.

The Forest Service, Department of the Interior, has developed methods of measuring tree heights from the shadows in vertical photographs and directly in oblique photographs and by this means the young growth is delimited from merchantable timber. Knowing the height of the trees and the number of trees per acre it is possible to estimate the volume of timber per acre, and with an accurate measurement of the areas covered by various types, it is believed that the time is not far distant when it will be possible to secure a better estimate of the stand from aerial photographic surveys than is now being secured from an ordinary extensive ground cruise where the cruising lines are run twenty chains or more apart.

White Pine in Pattern Making

White pine is used for 90 per cent of the patterns made in North America. The reasons for this are that white pine, more than any other wood, is easily worked, is of soft texture, is comparatively strong, is very durable and, most important of all, has very little shrinkage, which gives it the power to hold its shape indefinitely after being worked.

NORWAY HOUSE HAS INTERESTING HISTORY

A Point of Great Importance in Early Days of Fur Trade—Origin of Name

One of the most interesting place-names in the province of Manitoba, according to the Geographic Board of Canada, is Norway House, famous over a century ago as a district headquarters of the Hudson's Bay Company after that company had amalgamated with its rival, the North West Company, in 1821. The post, however, is much older than that date, having been founded in 1801. Strategically located on the Nelson river, in the vicinity of the tributary Jack river twenty-five miles north of Lake Winnipeg, Norway House was the great inland depot of the fur-traders. Situated in the middle of a triangle, of which the angles were York Factory, Fort Garry, and Fort Edmonton, it was the meeting place of the brigades of York boats carrying manufactured goods from the Hudson Bay port and of the canoe brigades bringing furs from the north, west, and south. The cargoes were exchanged and boatmen and canoemen raced back with all possible speed towards their several starting points to complete their long journeys before lakes and rivers were closed by ice. Thus the governor and his aides, by visiting Norway House for a month in the summer, were able to meet the company's representatives from all their vast territories and to learn at once the measure of success of the year's trading.

The story of the origin of the name of Norway House is a romantic one. In 1814 Governor Thomas of Hudson's Bay Company stationed at York Factory was informed from London that Norwegian axemen were being sent out to construct a road between lake Winnipeg and Hudson bay in the belief that more goods could be carried by horse and sleigh in the winter than by boat in summer. The Norwegians came into the country via York Factory and spread out along the route of the proposed road. One of the Norwegian contingents took up quarters on the strip of land which forms a peninsula between lake Winnipeg and lake Playgreen, the latter body of water being in fact the Nelson river which, on leaving lake Winnipeg, debouches at once into a lakelike expanse. Among the trappers and Red River settlers the landing place at the end of the peninsula became known as Norwegian or Norway point. Shortly afterwards the Hudson's Bay Company's post founded at Jack river in 1801 was temporarily removed to this peninsula, and was on that account called Norway House, a name which it retained when later the post was moved back again to its original location. Thus, the famous trading post received its distinctive name.

It is on record that in 1815 Lord Selkirk's Red River settlers, fleeing from the attacks of the forces of the North West Company to the shelter of the Hudson's Bay Company's post a little further down the Nelson river, visited the Norwegians at Norway point. Many of them remained at Norway point until they returned to their settlements on the Red River later on in the year. Several of the Norwegians, the roadway project having been abandoned, accompanied the settlers on the return journey in order to assist in the gathering of the crops and the re-establishment of homes.

Changing trade-routes robbed Norway House of its old-time glory but it has remained a trading post of the Hudson's Bay Company, and, with the future development of that part of Manitoba, it may again become prominent.

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OTTAWA, APRIL, 1931

TRIANGULATION SYSTEM IS RAPIDLY LAID OUT

(*Continued from page 1*)

During the past two years experiments have been made by Geodetic Survey officers to test the economy of aeroplane transport on this class of work and to perfect the technical methods by which this faster means of transportation is best adapted to geodetic surveying. The operation, just completed with great economy and speed, marks the commencement on a larger scale of a program of extension of triangulation operations to the huge northern areas of Canada in which development is proceeding so quickly.

It may be mentioned in passing that large areas of Canada abound in lakes and that this type of country is particularly suitable to geodetic operations with present types of aeroplane. With improved types of planes the extension of the method to other areas at present avoided because of the absence of lakes will probably become possible.

Apart from the economy, the use of aeroplanes as a means of transport for laying out a system of triangulation over large areas of Canada years in advance of final operations has other advantages. In parts of the country, such as northern Ontario where a program of building steel lookout towers for fire detection is in progress, the triangulation stations offer the best choice of hills as sites for these towers. The towers when built and trails and telephone lines installed are of great assistance when the triangulation is being completed. It is therefore mutually advantageous to forestry and geodetic officials to have the triangulation laid out well in advance of subsequent operations. When the preliminary work of the triangulation has been laid out well ahead of subsequent operations, as is possible when it is done by aeroplane, there need be no delay in completing the final work in any area in which development takes place or where maps are required, and data can be made available on an astronomical datum in plenty of time to be made use of. When the preliminary work has to be done by ground travel in rough country it is sometimes two years or more before results are available to those requiring the information. With aeroplanes as a means of transport in laying out the triangulation a year or more is saved in delivering results. Another advantage is that, the triangulation having been laid out with its different grades of accuracy as needed, operations which are required in isolated sections can be completed with the grade of accuracy which will make them fit in with the final net as laid out for the whole country.

CANADA'S RECREATIONAL RESOURCES AS A COMMERCIAL ASSET

(*Continued from page 1*)

what the Department of the Interior is doing will, I hope, suffice to make it clear that the Dominion Government is fully alive to its responsibilities, as well as to the country's opportunities, in the field of tourist development.

THE NATIONAL PARK SYSTEM

"As everyone knows, particularly those who have travelled in Western Canada, the Dominion Government has been active for many years in setting aside and improving an extensive chain of national parks. This park system had its origin many years ago when the West was first being opened up and it became apparent that there were in the Canadian Rockies regions of such striking scenic attraction as are to be found in few parts of the world. The policy was then adopted of setting aside the most suitable of these regions, to be kept permanently as areas of unspoiled natural beauty and to be preserved for all time as holiday grounds for the people of Canada. These Canadian parks are of such outstanding scenic magnificence that their fame has literally gone around the world and, while they are maintained and administered primarily for the enjoyment of our own citizens, they have become, in addition, a magnet which each year attracts thousands of travellers from other countries. Last year nearly half a million persons visited the national parks, and it serves to illustrate how far the renown of these Canadian recreational grounds has reached when I mention to you that this army of holiday-seekers included visitors from more than twenty countries.

"The Dominion parks are steadily being extended so as to become more and more, in fact as well as in name, a national system. Formerly, they were confined to the mountainous regions of Alberta and British Columbia, but in more recent years steady progress has been made in adding to the system selected areas of exceptional beauty in other provinces. Happily, there is no province from Nova Scotia to British Columbia that does not possess regions which, in scenic and other attractions, form ideal areas for purposes of public recreation. Three years ago Prince Albert National Park was opened in Saskatchewan, and during the present year Riding Mountain Park in Manitoba will be thrown open to the public. In Eastern Canada there are also the Point Pelee Park in southern Ontario, the island reservations set aside among the Thousand Islands of the St. Lawrence, Fort Beausejour Park in south-eastern New Brunswick, and the Fort Anne Historic Park at Annapolis Royal in Nova Scotia, and within the past year the Dominion Government has acquired for similar purposes a group of islands in the beautiful Georgian Bay region.

PRESERVATION OF HISTORIC SITES

"The Department of the Interior, through the National Parks Branch, has been active in the work of acquiring, preserving, and suitably marking historic sites of national importance throughout the Dominion. In connection with this work it acts on recommendations of the Historic Sites and Monuments Board of Canada, an advisory body composed of eminent authorities on Canadian history. Canada is rich in sites of historic interest and already over 220 such sites have been selected as being worthy of national commemoration. The control of over 150 of these has been acquired by the National Parks, and some 130 memorials have been erected. Needless to say, the progress of this work of historical preservation means a real enrichment of Canada's appeal to the traveller from other countries, adding to the scenic beauty of the Dominion the element of human interest which surrounds the notable figures and scenes that have formed the pageant of our national career from the earliest years of North American exploration down to the present day.

"The maintenance of the National Parks, and the allied activities to which I have just referred, involve a substantial annual outlay of federal funds. They form a cornerstone for the Dominion Government's contribution to the attraction of profitable tourist trade from other countries, though it should never be lost sight of that the National Parks are maintained primarily for the benefit of our own citizens. There are other phases of the Department of the Interior's work which relate more exclusively to the attraction of the non-Canadian tourist, and it is in these phases of activity that we, so to speak, have to enter the ring of international competition.

TOURIST BUSINESS IS COMPETITIVE

"It is perhaps not very generally realized that the tourist business has in recent years become one of the really big prizes of international trade and, in keeping with that fact, it has naturally become a highly competitive type of business. Every wideawake country to-day is fully conscious of the value of the tourist dollar, and the business of attracting the stream of profitable tourist travel is a matter of keen competition between different countries, just as in the case of selling wheat or wool or copper or sugar or any of the other staple commodities of international commerce. It would be very difficult to make even an approximate estimate of the value of the international tourist trade of the world, but fairly reliable estimates have been made for individual countries. The U.S. Department of Commerce, for example, places the expenditure of American tourists in foreign countries at over $800,000,000 a year; and it would certainly be well within the mark to say that the total international trade of this type runs into considerably more than a billion dollars a year—probably nearer two billion dollars. The competition for this business is becoming keener every year. Canada's position is one of almost unique advantage in that we have a vast country with endless variety of outdoor attractions, and in that we are situated right next-door to the United States which is by all odds the largest and richest tourist market in the world. Notwithstanding those advantages, we have to bestir ourselves if we wish to make the most of our opportunities not only in relation to our near neighbours but also in relation to the volume of travel from the British Isles, Continental Europe, and elsewhere.

MAKING CANADA'S TOURIST ATTRACTIONS KNOWN

"What we have to do, particularly—and what we are doing on a considerable scale through the National Development Bureau of the Department of the Interior—is to make Canada's attractions to the tourist known abroad as widely and as vividly as is possible. The details of how that work is carried on probably would not interest you so much as the objective—and the objective is to make sure that desirable tourists from other countries are informed, in an effective way, as to what Canada has to offer them in the form of recreation—what attraction the Dominion holds out for the man who wants to make a pleasant motor trip for a week-end, a week or a month; for the man who wants to go hunting or fishing or canoeing or ski-ing; for the man who wants a restful vacation at a summer resort or winter resort; for the man who wants to travel by rail or by steamship; and the woman who wants to do any or all of these things.

A POLICY OF CO-OPERATION

"The Department of the Interior, in short, maintains a national tourist development and information bureau. Our working policy is summed up pretty well by the one word *co-operation*. It is no part of the Department's policy to attempt to over-centralize Canadian tourist development effort. The nature of this field of work is such that a heavy share of the most useful public aid to the expansion of this business comes, and always must come, from the initiative of provincial and civic organizations. From day to day the Department of the Interior is co-operating with practically every live organization of those types in the Dominion, as well as with literally hundreds of travel and tourist bureaux in the United States or elsewhere abroad. Our fundamental concern is simply this fact—that what we call our 'recreational resources' have in recent years established beyond all question their standing as one of Canada's chief commercial assets, and that their development calls for a fair measure of federal support in such forms as will not duplicate or encroach upon the fields of municipal or provincial activity.

"Finally there is this to be said—that the satisfactory and permanent building up of Canada's tourist industry, as of virtually every other business, depends more in the last analysis upon private enterprise than upon all other factors combined. There are two thoughts I am anxious to leave with you to-night—Every citizen of Canada when he comes in contact with the tourist from abroad can contribute a real service toward building up of Canadian business by doing whatever lies in his power to see that the tourist is advised and assisted to see as much as possible of our country and our development while he is within our borders; to see that Canada's attractions are properly placed before him so that he will, if possible, extend his visit and thus obtain additional knowledge of opportunities for Canadian development.

"Every Canadian citizen ought also to see that the tourist meets with courtesy, hospitality and fair dealing. A national reputation for giving a 'square deal' in commercial transactions will do far more than any other single factor toward ensuring for Canada the business benefits of a great, permanent and teadily growing volume of tourist traffic. And the building up of such a national reputation is a matter which, I am sure, can safely be left in the hands of the citizens of the Dominion."

Canada's Forests

The forests of Canada are, in the aggregate, the second most important natural resource, being exceeded in actual value of products by agriculture alone.

SERIES OF ECONOMIC REPORTS INSTITUTED

Department of the Interior Conducts Resources and Industrial Surveys—Work to be Extended

In view of the ever growing demand for detailed information regarding Canadian development and opportunities the Department of the Interior, through the National Development Bureau, has instituted a series of economic reports dealing mainly with the resources and industries of small areas. It is proposed to cover various counties in Ontario and Quebec and other economic areas throughout the Dominion.

These reports which are compiled with the co-operation of municipal councils, boards of trade, and representatives of industry aim to present in compact form the principal facts concerning the natural resources of the county dealt with. To date six counties in Ontario have been covered by these economic reports, namely, Dundas, Stormont, Lennox and Addington, Hastings, Frontenac, and Peterborough, while the compilation of reports dealing with Leeds and Grenville counties is at present proceeding. Work has also been started in Quebec in the Eastern Townships and a report on the county of Shefford is in course of preparation.

Agriculture, which is of considerable importance in most of the areas covered, receives a large measure of attention in each of the reports. Dairying is indicated as generally the leading branch of the industry in this part of the province. Where fur farming has been introduced rapid development has taken place and it forms a valuable new source of income. Other sections include forestry, giving types and distribution; economic minerals, describing the geology of the area and the mineral occurrences; water-powers, including developed and undeveloped sites, distribution, and rates; and recreational resources, recording the scenic and sporting attractions, roads, and hotels.

The chapter on industrial development covers a general summary of the situation with the industries grouped for easy reference. In addition to the other important data, information regarding the raw materials used by the various manufacturers, with the sources and quantities, are also given. This part of the report also directs attention to the amount of raw materials, and semi-manufactured and manufactured products imported into the area whether from other parts of Canada or from foreign sources, and points the way for the replacement of the foreign imports with goods fabricated within the area or of Canadian origin. Another section deals with the history of the region, while a chapter is also devoted to population, its distribution and origins. Education, topography, climate, transportation, labour, and municipal statistics are dealt with while short paragraphs describe the various incorporated urban and rural centres.

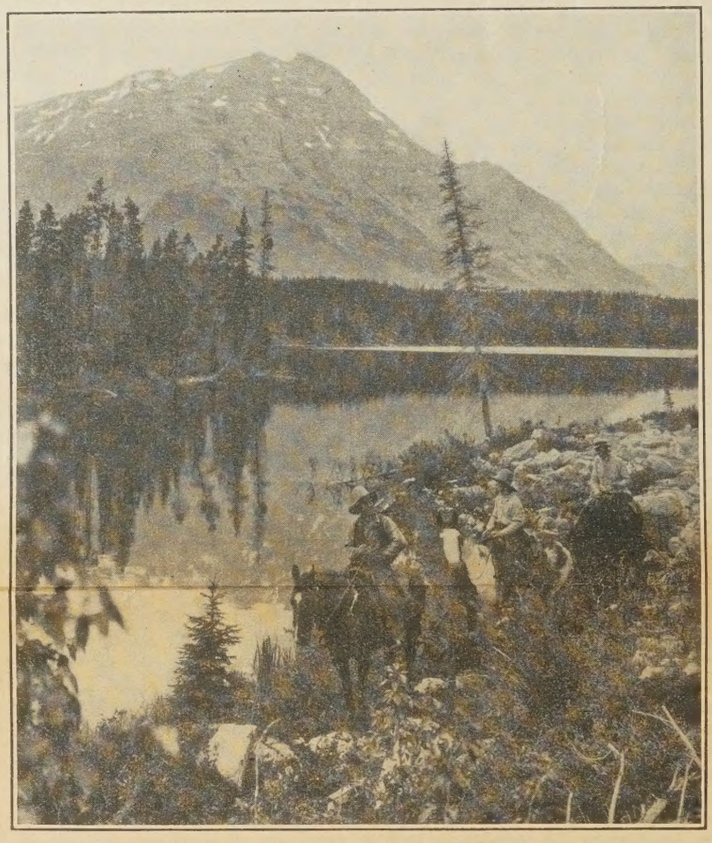
In order to complete the picture of a county's economic development, a lithographed map in two colours accompanies each report. Black is used to indicate the geographic features of the area and red the natural resources in their different stages of development, also the location of the various types of industrial plants, such as saw-mills, dairy factories, brick and cement plants, etc. A valuable addition to the more recently issued of these reports is an industrial reference at the back of the report, giving the name of each industry, the manager's name, the chief products, and other information.

As these reports are mimeographed, only a limited number can be published so that the distribution must be confined to those who have an active interest in the area described. Applications for copies should be made to the Director of the National Development Bureau, Department of the Interior, Ottawa, Canada.

PARK TO PARK TOURS IN THE CANADIAN ROCKIES

Great Extent of Contiguous Park Territory Offers Unique Attraction to Motorists and Trail Riders

There is one feature of the National Parks of Canada in the Canadian Rockies which presents a unique attraction to visitors and that is the great extent of contiguous park territory which is open to their enjoyment. Four of the principal parks in the mountains touch at some point on their boundaries. Banff Park and Jasper Park, which adjoin, lie on the eastern slope of the Rockies; Yoho and Kootenay on the western slope. The eastern boundaries of the two last named meet the western boundary of Banff Park at the Divide, while the northern boundary of Kootenay Park also coincides in part with the southern boundary of Yoho Park.



Park to Park Tours in the Rockies—The great extent of contiguous park territory in the Canadian Rockies offers unexcelled opportunities for enjoyment, particularly by the trail rider. The above view shows a party on the trail along Blue creek near the headwaters of the Snake Indian river in Jasper National Park.

The construction of motor highways during recent years has made possible to the motorist a continuous loop route through three of these parks—Banff, Yoho, and Kootenay. Starting from the western gateway of either Kootenay or Yoho Park he may travel along continuous highways totalling, with their extensions, nearly 400 miles, every mile of which lies within national park territory. Beginning from the eastern gateway of Banff Park he may do the same except that he will take the provincial highway for the stretch up the Columbia valley from the west gateway of Kootenay to the west gateway of Yoho, or vice versa.

The total park area open to him in this one trip covers 3,679 square miles and, so far as he is concerned, it constitutes one continuous playground. By whichever gateway he enters he pays one licence fee of $2 which entitles him to travel through the whole three parks and gives him the privilege of making camp at any of the assigned campsites. The fact that the regulations of the National Parks of Canada, Department of the Interior, are practically uniform throughout also adds to his comfort. He procures one set of regulations in any one park and, with the exception of some minor differences in fishing restrictions due to the seasons, knows that they will be the same.

This opportunity to journey without break from one park to another is greatly appreciated by tourists. It is a well known fact that the taste for national parks "grows by what it feeds on." A motorist who has enjoyed his visit to one park wants to go on to another if it be within easy reach. One can never have enough of great scenery, especially if it be sufficiently diversified as it is in the parks mentioned. There is a marked difference in character between each of the three parks. Proximity does not by any means mean uniformity. The scenery of the western slope differs so widely from that of the eastern slope as to be distinguishable by even the least observant traveller. The parks are not like threaded beads of the same colour and character, they are separate gems each distinct in beauty and appeal. The long, gently sloping valley of the Bow has no counterpart on the western slope, where streams like the Yoho and the Kicking Horse tear down from the Divide through wild gorges and canyons. There is a marked difference in the forests, the plant life, the wild birds, and even some of the wild animals on the west of the Divide from those on the east, while even in Yoho and Kootenay Parks a distance of a few score miles produces variations which add interest to the landscape.

The opportunities of travel open to the trail rider are even greater than heretofore, for the northern boundary of Banff Park now touches, throughout a considerable distance, the southern boundary of Jasper. In addition to the three parks open to the motorist, the trail rider has the whole vast region of Jasper Park added to his field of enjoyment. Within the last few years the parks administration has been opening up and developing a system of connecting park-to-park trails. If the visitor cares to do so he may start at mount Joffre on the southern boundary of Banff Park, travel to mount Assinboine and thence via Simpson pass down into Kootenay Park and back by the recently completed trail over Ball pass and thence to Banff or Lake Louise; or he may go on from Kootenay Park across the spectacular Wolverine pass to Field or Hector. From either Lake Louise or Field he may start, too, on the "steel-to-steel" trip north to Jasper, a journey of 200 miles in almost a straight line, requiring twenty-one days to complete. From Jasper his choices are many. There are over 600 miles of trail in the park open for his enjoyment. If he takes the Snake Indian valley he may journey to the northern boundary of Jasper Park, situated at a distance of 300 miles in a straight line from his original starting point.

With either Banff, Field, or Jasper as his headquarters the trail rider has today such unlimited opportunities calling to him that it would require several years to exhaust them all. This is, in fact, one reason why visitors come year after year to the National Parks. Their first summer only suffices to acquaint them with the possibilities of the mountains. They go away with a realization of all the regions there are yet to visit and looking forward to another summer with fresh adventures into new fields.

PETROLEUM PRODUCTION IN ALBERTA IN JANUARY

Petroleum production in Alberta was slightly lower during the month of January, 1931, than during December, 1930, but well above the output for January of last year. Figures compiled in the Department of the Interior from the reports of operators show that the total production in January of this year was 168,785 barrels as compared with 175,572 barrels in the previous month and 91,558 barrels in January, 1930.

The figures follow:

	Naphtha (brls.)	Light Crude (brls.)	Heavy Crude (brls.)	Total (brls.)
Jan. 1931.	159,588	8,484	713	168,785
Jan. 1930.	82,036	8,454	1,068	91,558

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